

HAZARDS

Voltages of 60 V and above occur in the equipment. There is a risk of contact with live parts. It is essential to observe the following points:

- The mains power must be disconnected before opening the equipment
- Greatest care must be exercised when working with the equipment in switched-on conditions.
- An attendant should possibly be on hand to disconnect the mains immediately in the event of an accident.

Safety instructions

W A R N I N G The component groups contain **M O S** components!

MOS COMPONENTS

These are protected against destruction caused by normal charging by means of protective structures at the inputs and outputs. In order to protect the components also from very heavy static charges, we recommend that the following rules be observed:

Persons who work with apparatus containing MOS components should be discharged by contact with an earthed object or by bringing the equipment housing to this potential.

MOS components may only be fixed to the housing; the terminals of the components must not be contacted to this.

When the equipment/apparatus is switched on, conductor tracks and unisolated components must not be touched by hand nor must they be shunted to the housing.

MOS components must always be transported in conductive foam material. The terminal connections of the MOS components must not bent over.

Before any soldering work the soldering iron tip is to be quickly tapped on the housing or on an earthed object.

Before the wire bridges are touched with the side cutters, the tool held in the hand must be discharged to earth.

3 SERVICE AND MAINTENANCE

3.1 Trouble-shooting (RX 1001 M / RX 5001)

3.1.1 Built-in test equipment (B I T E)

The self-test is separated into two single tests:

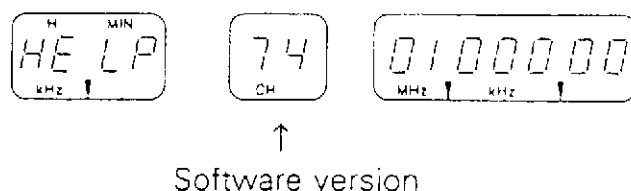
During current operation the following tests are continuously being done:

- HELP 1 Preselection: Check of setting by comparing the reference voltage with the Servo-Pot voltage.
- HELP 2 1. Mixer: Monitoring of Oscillator-level
- HELP 3 2. Mixer: Monitoring of the Mixer Oscillator level.
- HELP 4 Filterboard: Monitoring of the diode switch and the level for 30 kHz IF-OUT
- HELP 5 Demodulator: no continuous monitoring
- HELP 6 525/10 kHz IF-OUT (IF-Output): no continuous monitoring (not used in RX 5001)
- HELP 7 VCO-B: Check whether PLL is locked
- HELP 8 VCO-A: Check whether PLL is locked
- HELP 9 BFO: Check whether PLL is locked
- HELP 10 Power Supply: Monitoring of voltages +5 V, +12 V and +18 V for permissible tolerance
- HELP 11 Buffer-PCB: Monitoring of the reference voltage of the PRESELECTOR middle tuning position (only when Preselector is switched off)
- HELP 12 Serial Interface: Monitoring of correct data from the BCD-switch
- HELP 13 Audio-PCB: no continuous monitoring
- HELP 14 CPU PCB: Monitoring of memory, address bus, data bus, control bus, bus drivers etc., by printing, reading and comparing the test data.
- HELP 15 I/O-PCB: no continuous monitoring
- HELP 16 CLOCK PCB Monitoring of minute changes

In case a failure is being recognized in one of the monitored functions, this will be indicated by the BITE LED flashing. The failure may be detected by releasing the Auto-Test (see chapter 3.1.2).

3.1.2 Releasing the AUTO TEST

The AUTO TEST can be released by the key TEST and it starts with briefly showing the following display



and then performing the LED-test. After this, the individual functions will be checked by means of the 1 MHz-Test Signal. When the test sequence is in progress the "failure indication-LED" lights, and no entry, except ERASE CHANNELS is possible.

The AUTO TEST cannot start when another entry process (for example: selection of mode, entry of frequency) is not yet finished. Only when this process is finished or being interrupted a test can be released again. When the test sequence is over, the failures are indicated. This includes the indication of failures recognized before the current operation. When there are several failures, the individual failure numbers can be made visible by the key *.

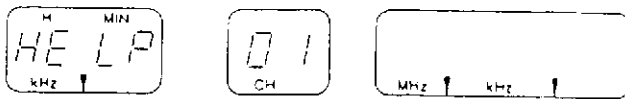
By pressing a different key of the keyboard the receiver is being reverted back to the state it was operating in, before releasing the test.

In case no failure has been found the receiver automatically will be brought to the previous state again when the test is over.

Where ever possible, the circuits are being monitored during the current operation. Arising failures will be indicated in this case by flashing of the "failure indication LED" (refer to 3.1.1).

The AUTO TEST can be also released externally in the REMOTE-position of the CONTROL SWITCH when the REMOTE PRINT is used, and the receiver is remote controlled by a Remote Control RX 1001 F or RX 5001 RC, or a computer. Another method to imitate an Auto Test is the Go/No Go Test refer to chapter 3.1.5.

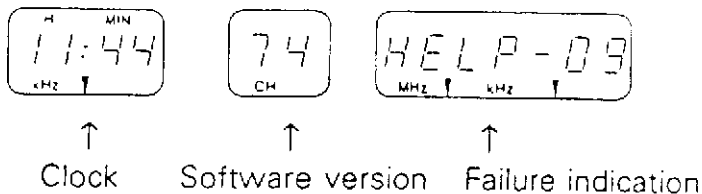
After the LED Test the DISPLAY looks like this:



HELP 01 means Test of the PRESELECTOR acc. to HELP 01 procedure.

The receiver advances automatically to the next test step. Observing the indications HELP 01, HELP 02 etc. one may follow the test run. When the complete test is over and no failure has been detected, the receiver reports this by means of a tone. Simultaneously the LED BITE extinguishes and the receiver gets back to the normal receiver mode.

When the receiver has detected a failure, an indication like this will be given:



i.e.: the receiver has detected a defective BFO. By pressing the key * on the keyboard further malfunctioning groups effected by the present failure may be detected.

3.1.3 Failure Localisation and Exchange of Modules

After the AUTO TEST via the TEST key the failure indication and localisation is shown on the frequency display as for example: HELP 09.

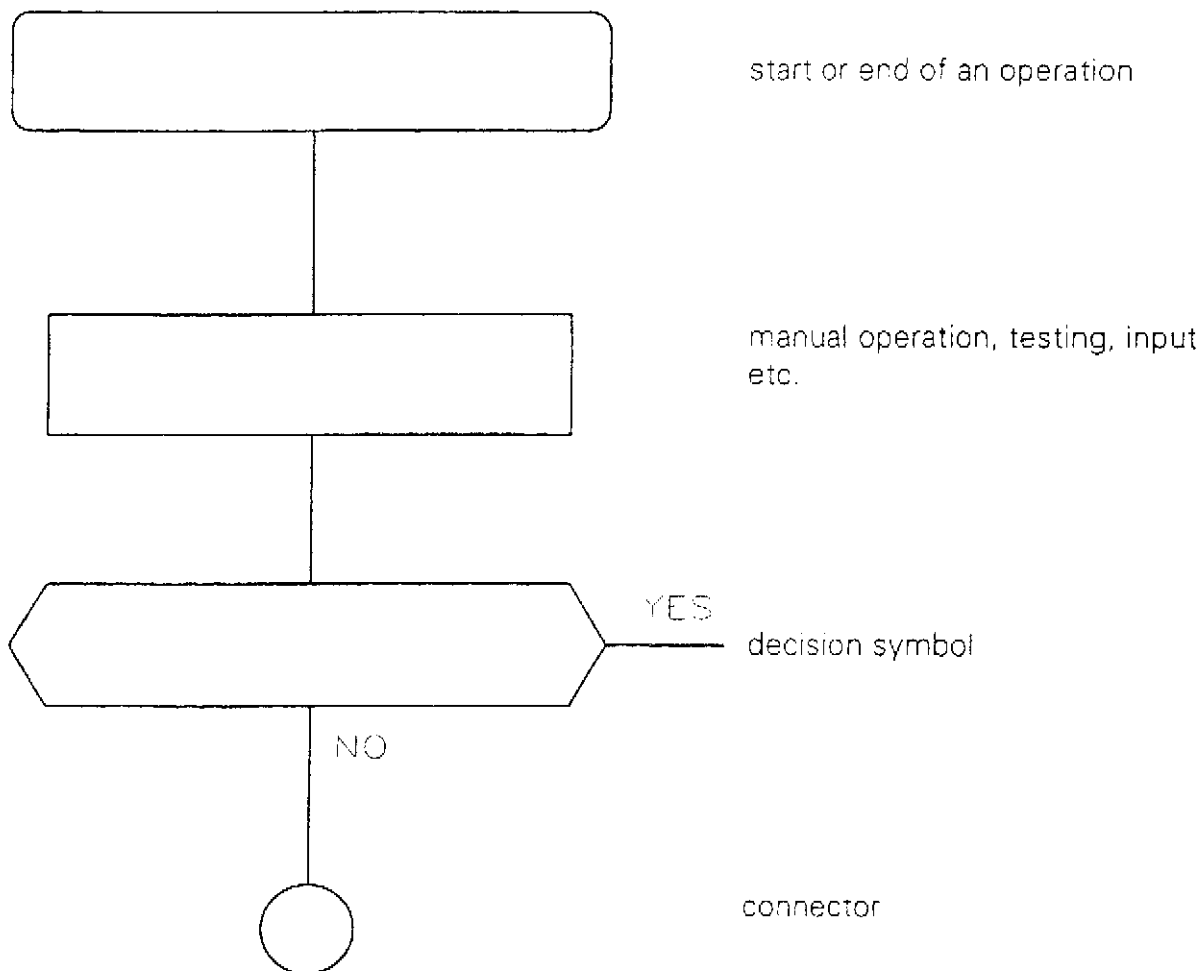
From the diagram may be seen that the module BFO is defective.

If, in this case the TCXO would not oscillate for example, the VCOs A and B could not synchronize either. Therefore, the microprocessor gives as a first report -HELP 09- and as a further failure indication HELP 07, then, (VCO B) and -HELP 08- (VCO A). Failure indications HELP 07 and HELP 08 are being indicated by pressing the key *. By further pressing of *-key HELP 09 will appear, thus allowing all failure indications to be recalled. In order to reset the receiver to the start condition any other key may be pressed.

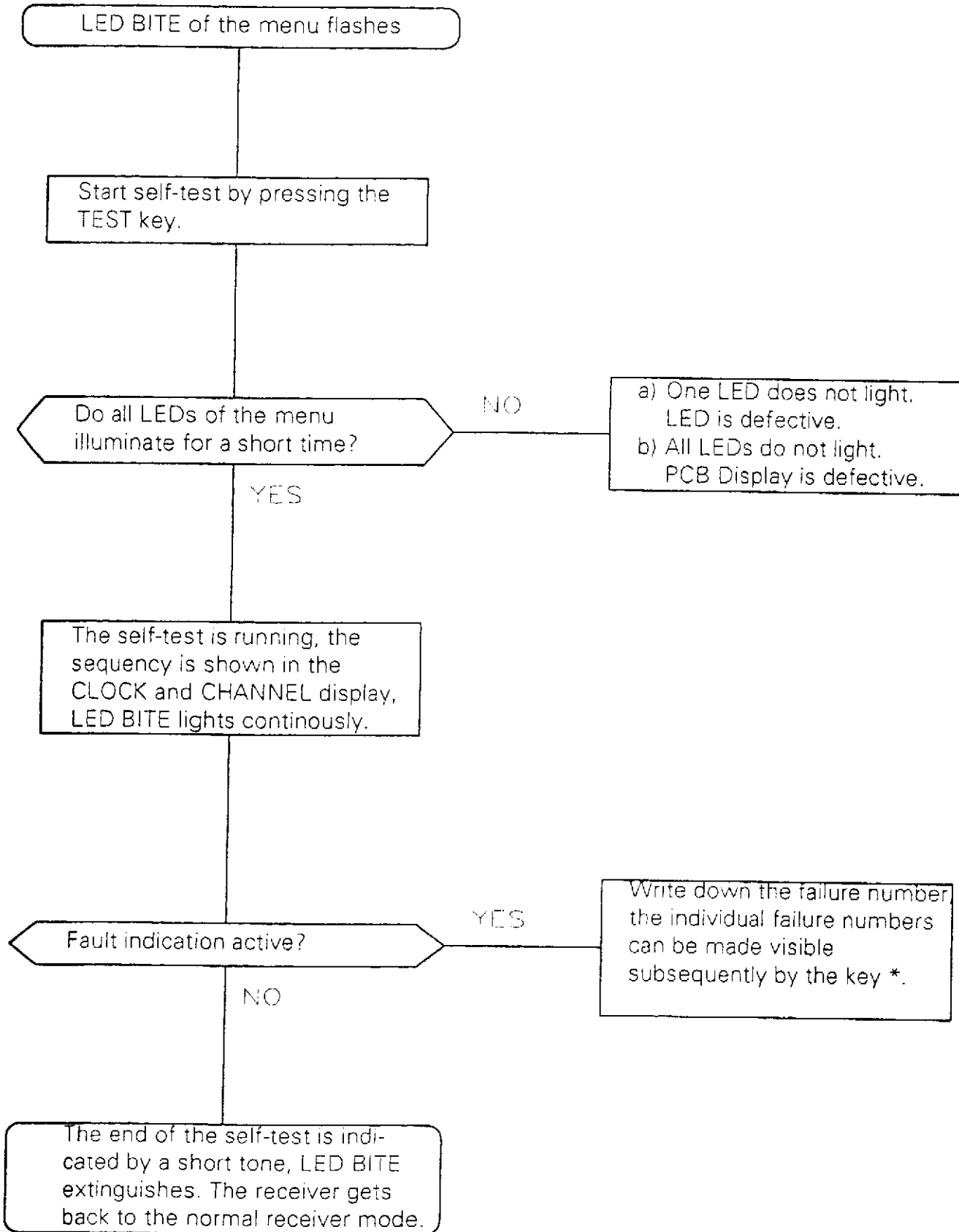
3.1.4 Trouble shooting with the help of the BITE test

If, during the operation in progress, the failure indication LED (BITE) flashes, the specific failure may be detected by pressing the TEST key. A test sequence is then performed, starting with an LED-test of the display. For some time all LEDs light for the operator's visual check.

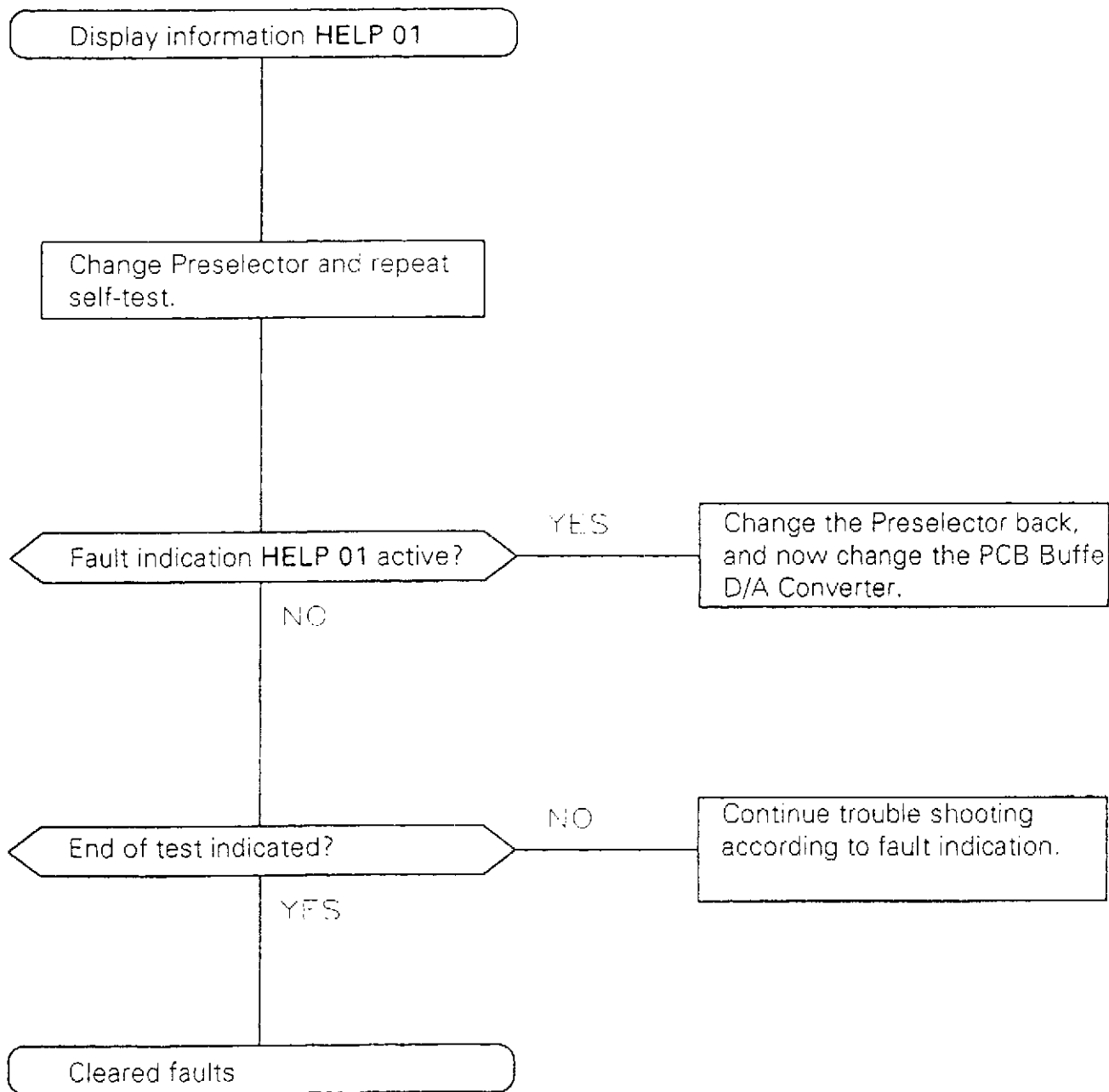
The following symbols are used:



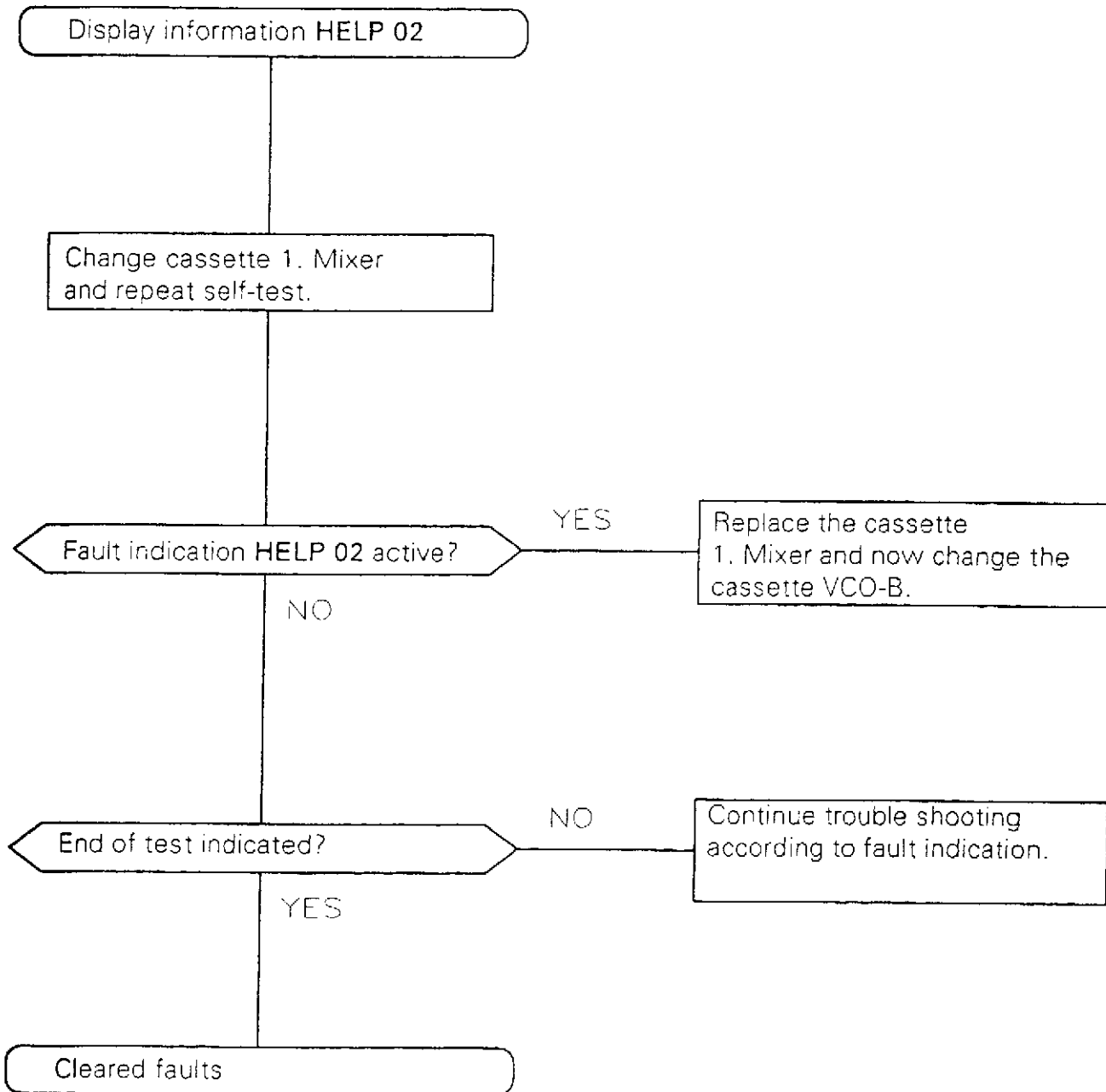
Trouble shooting



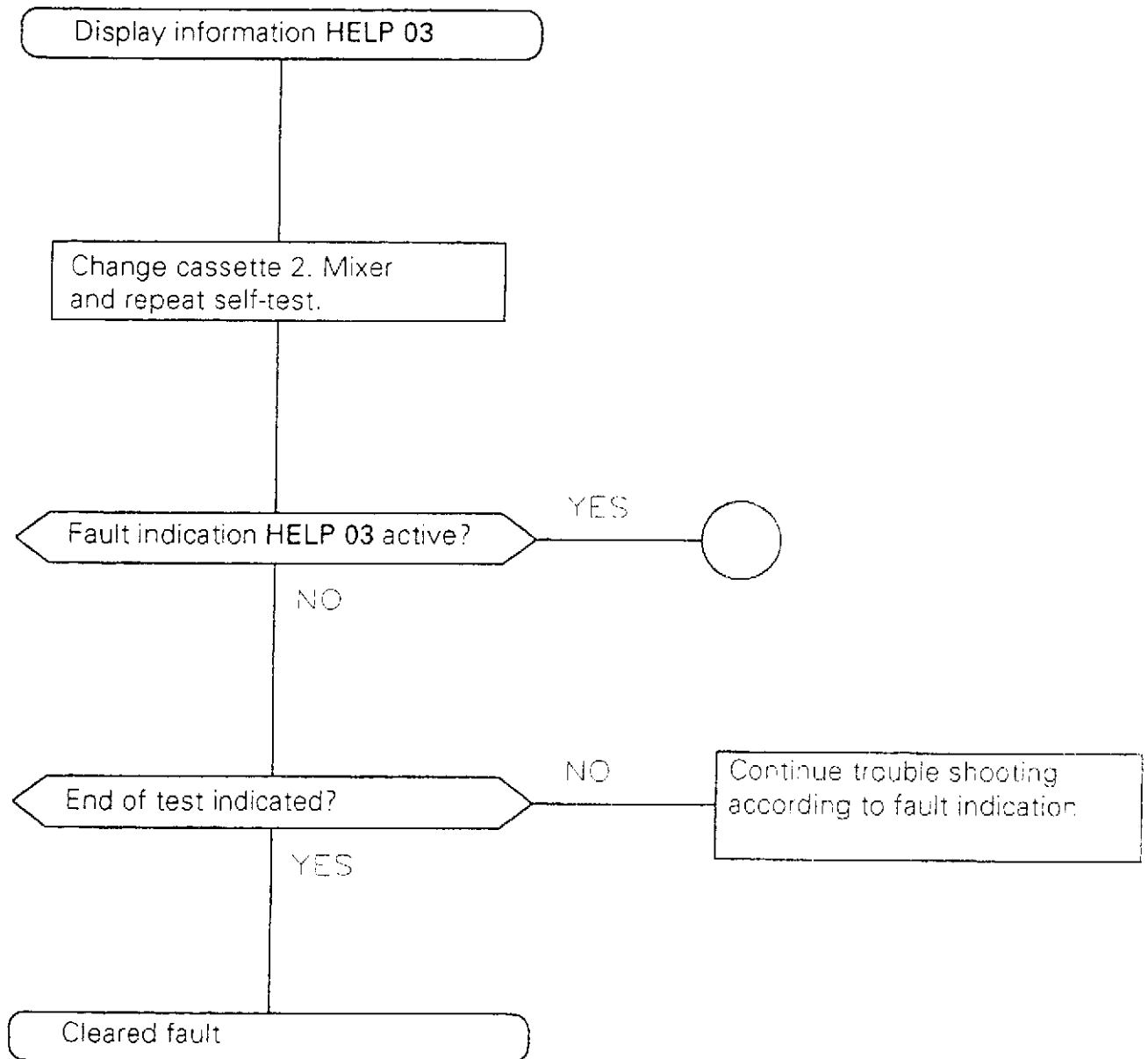
Fault indication HELP 01

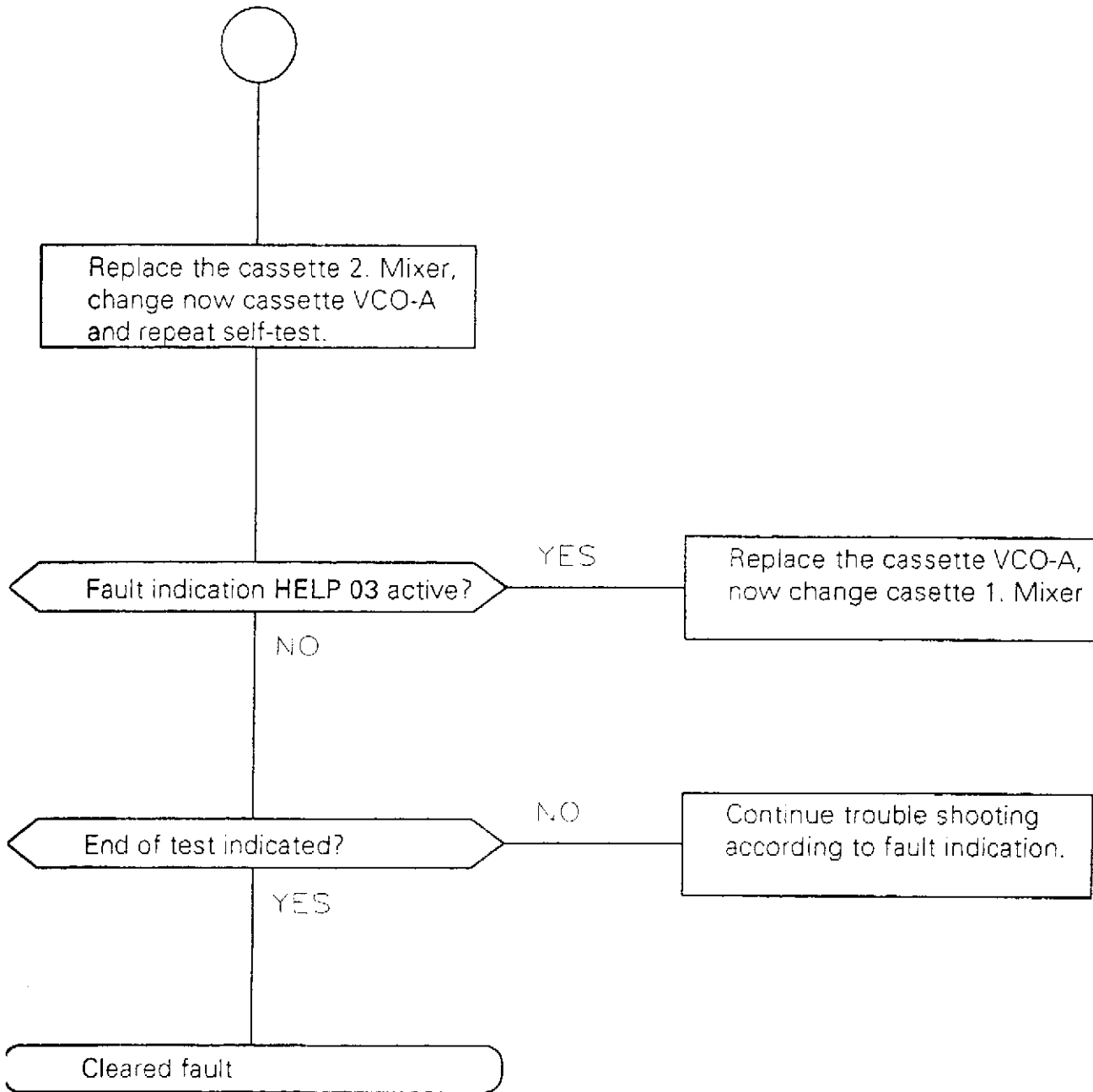


Fault indication HELP 02

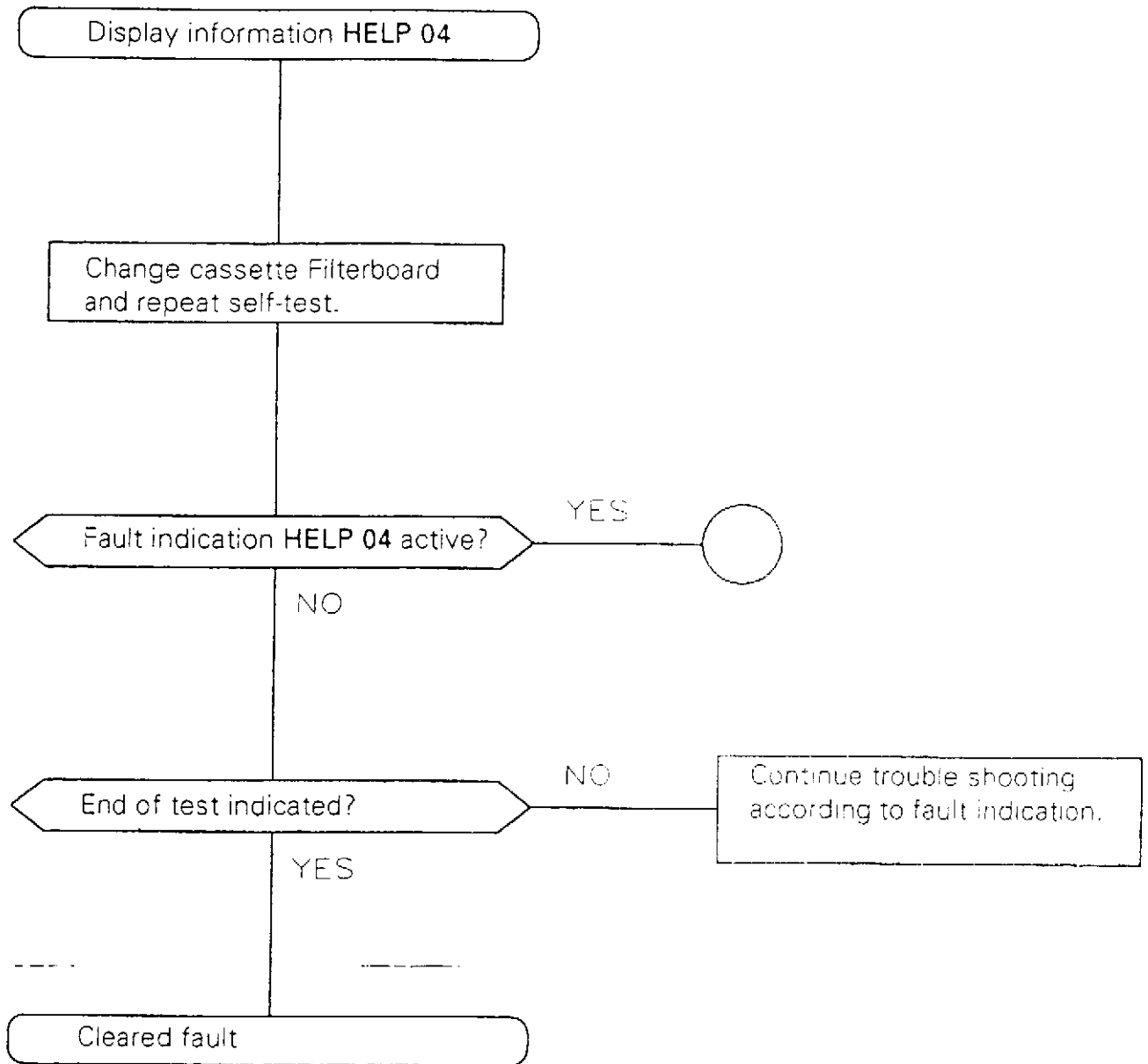


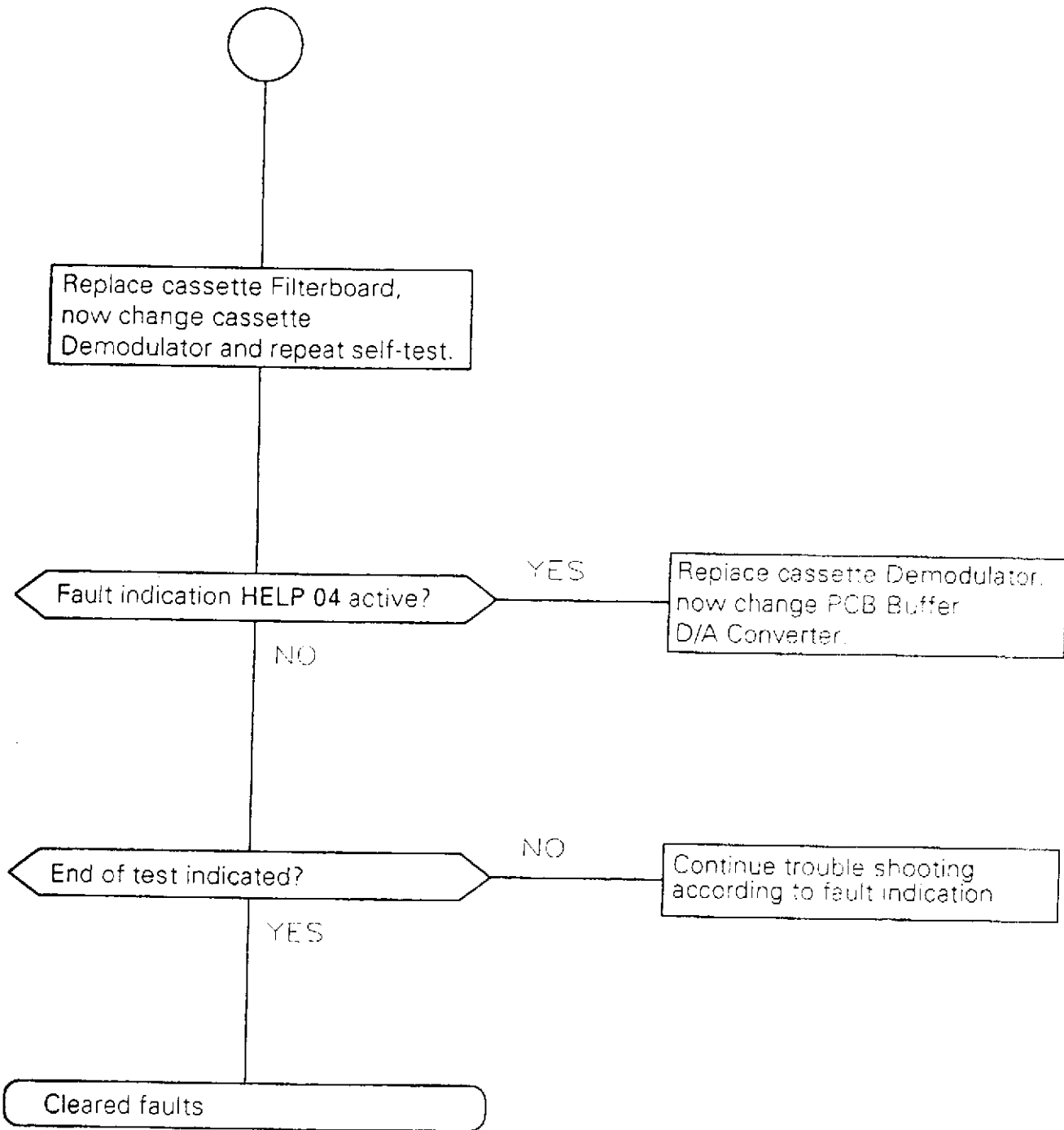
Fault indication HELP 03



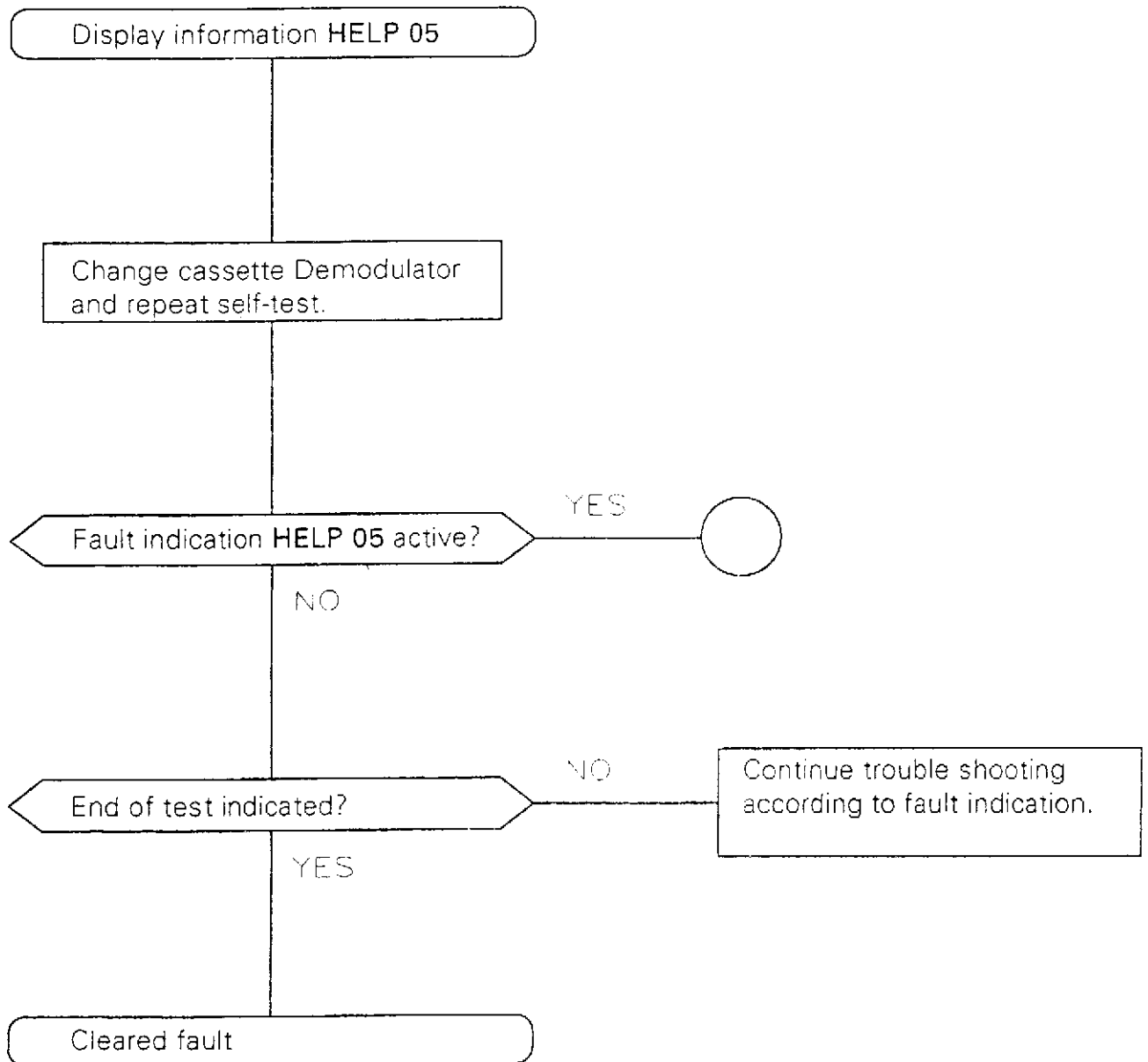


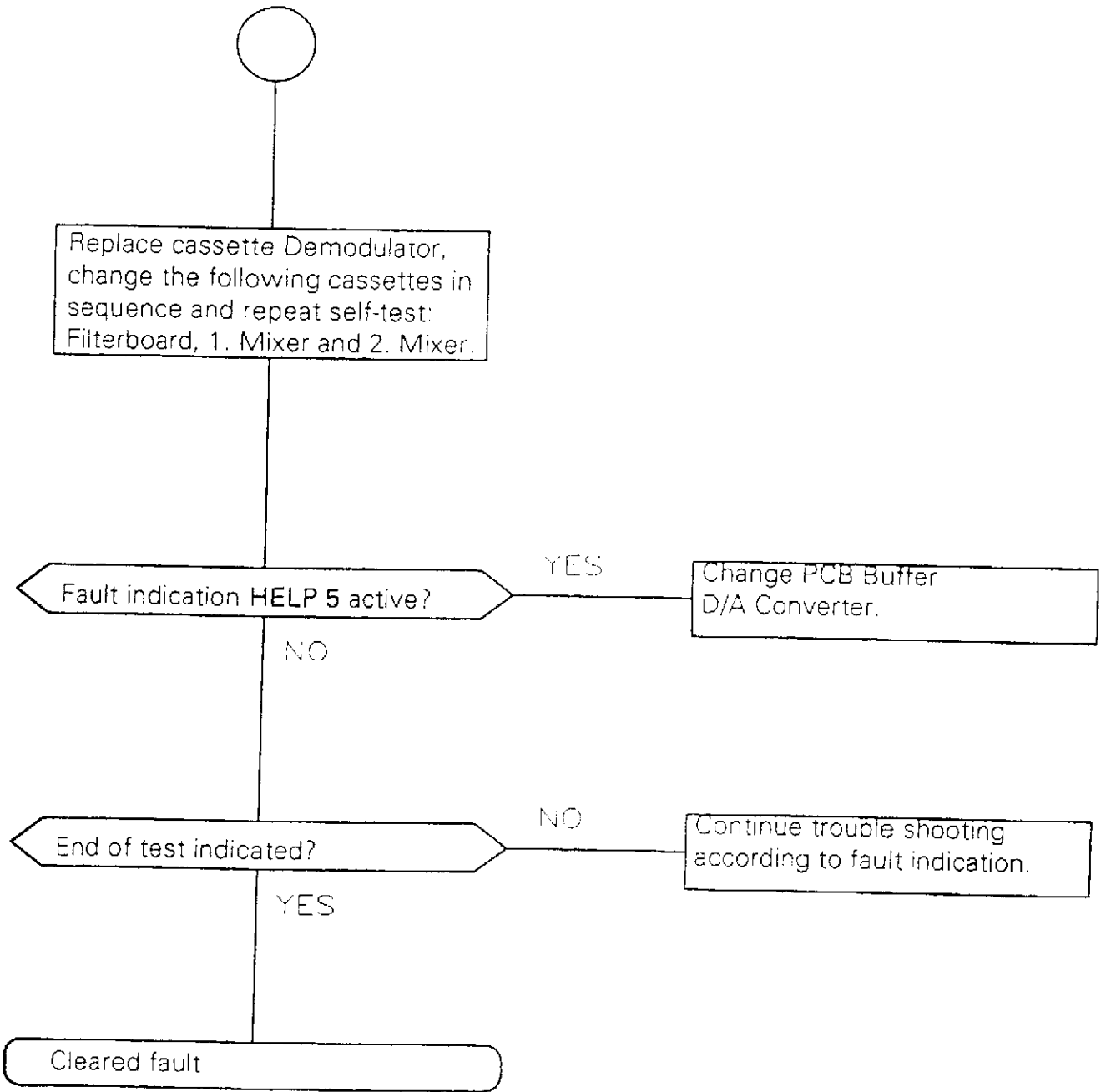
Fault indication HELP 04



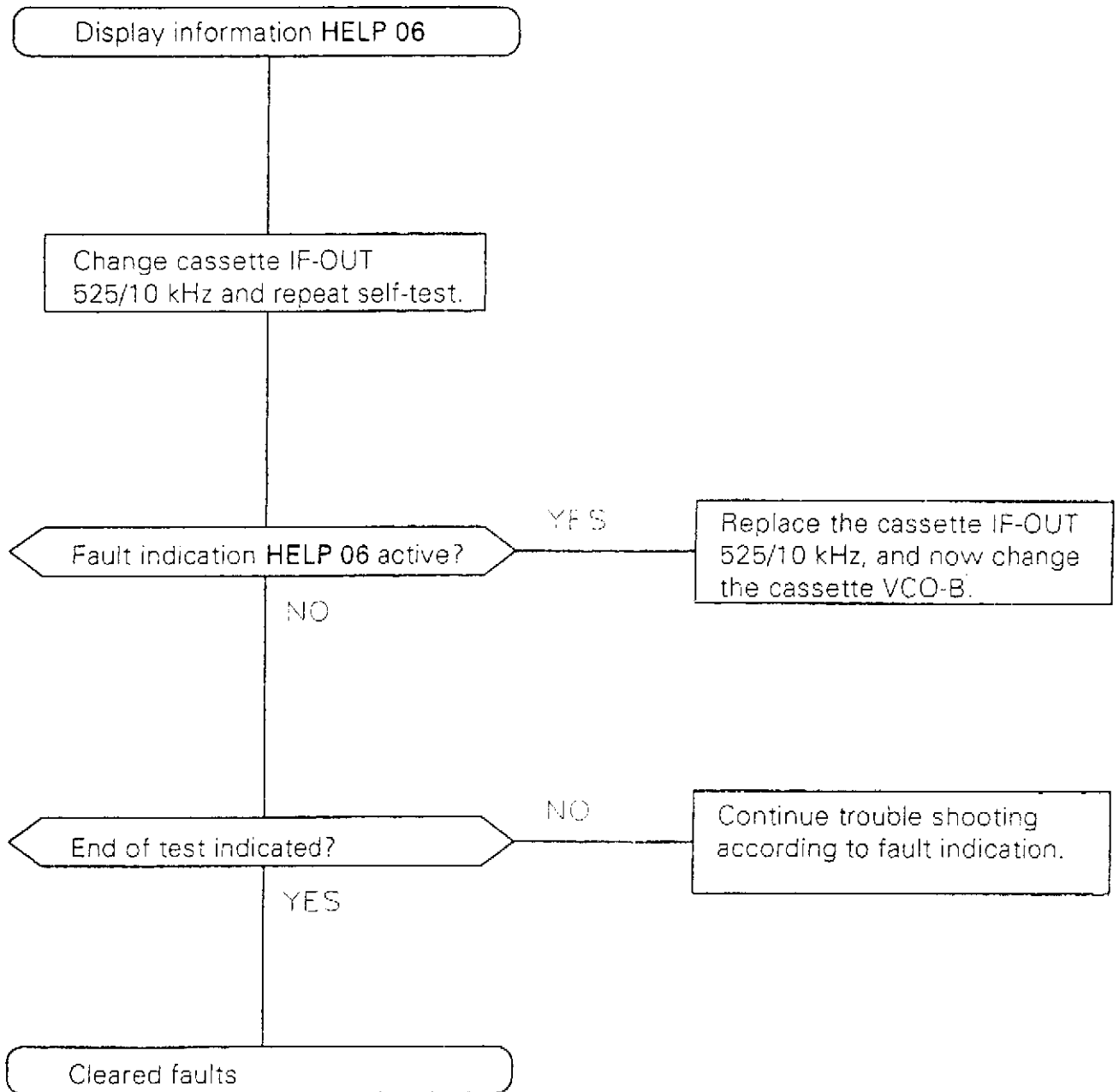


Fault indication HELP 05

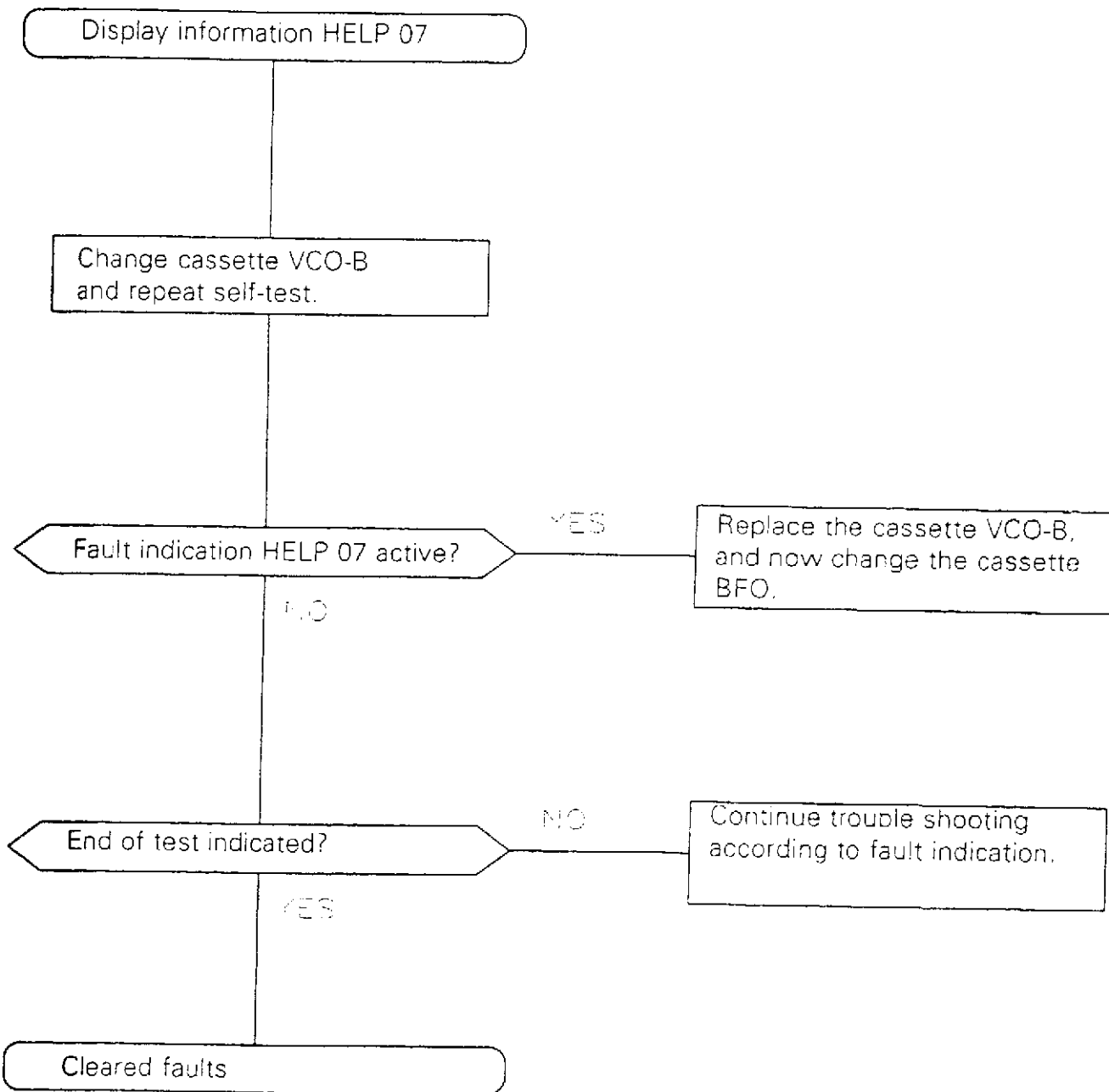




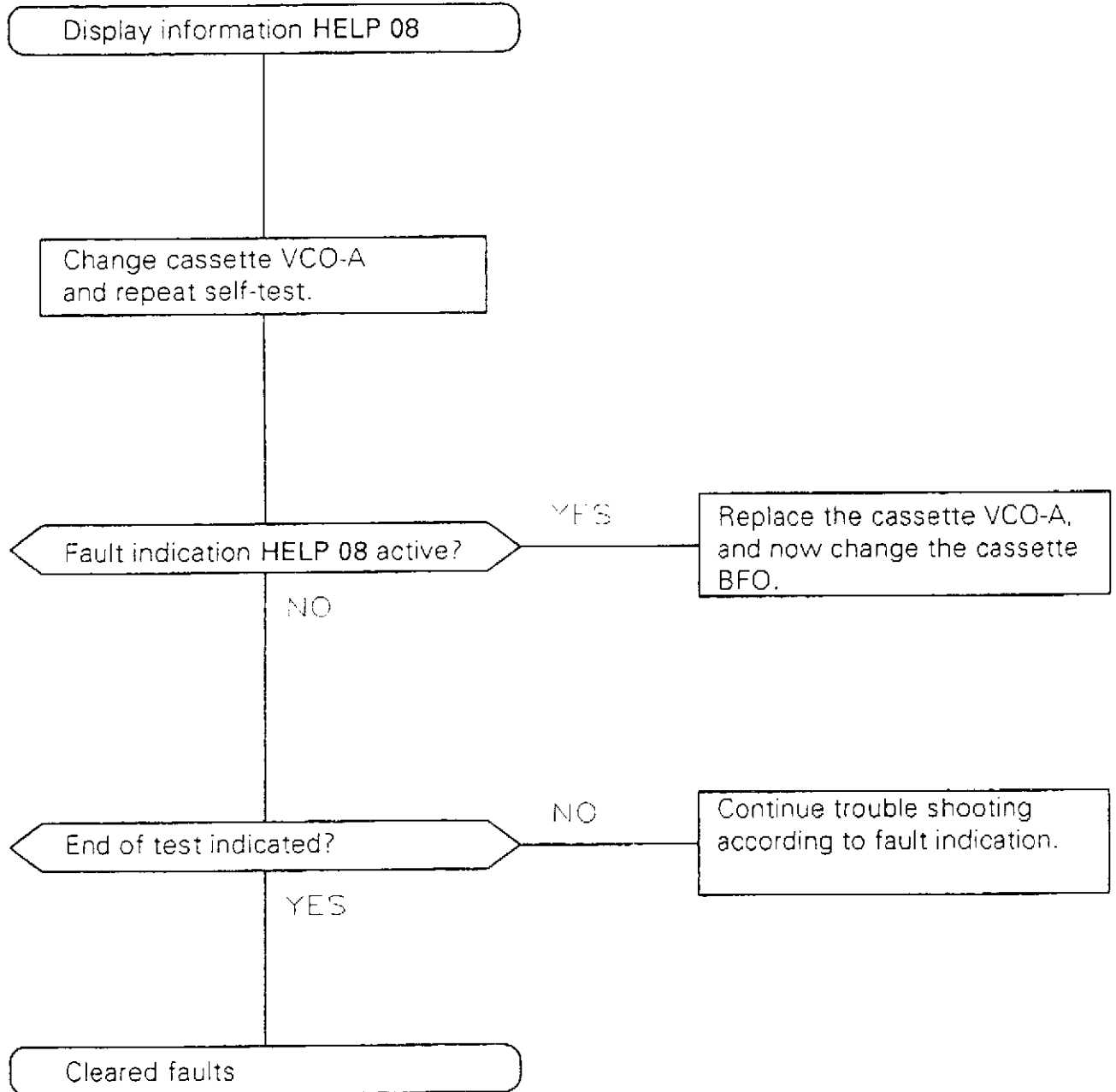
Fault indication HELP 06 (only RX 1001 M)



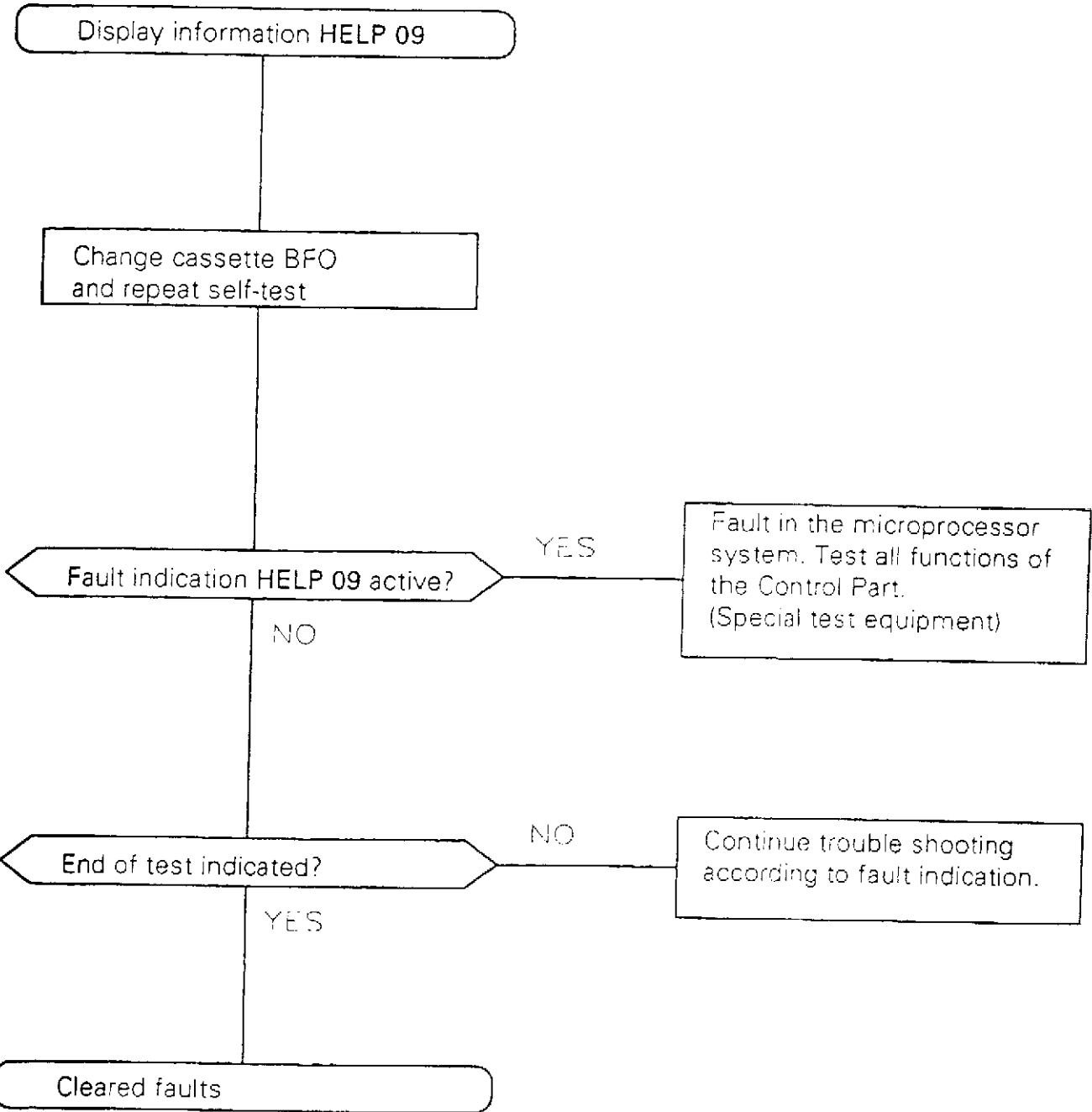
Fault indication HELP 07



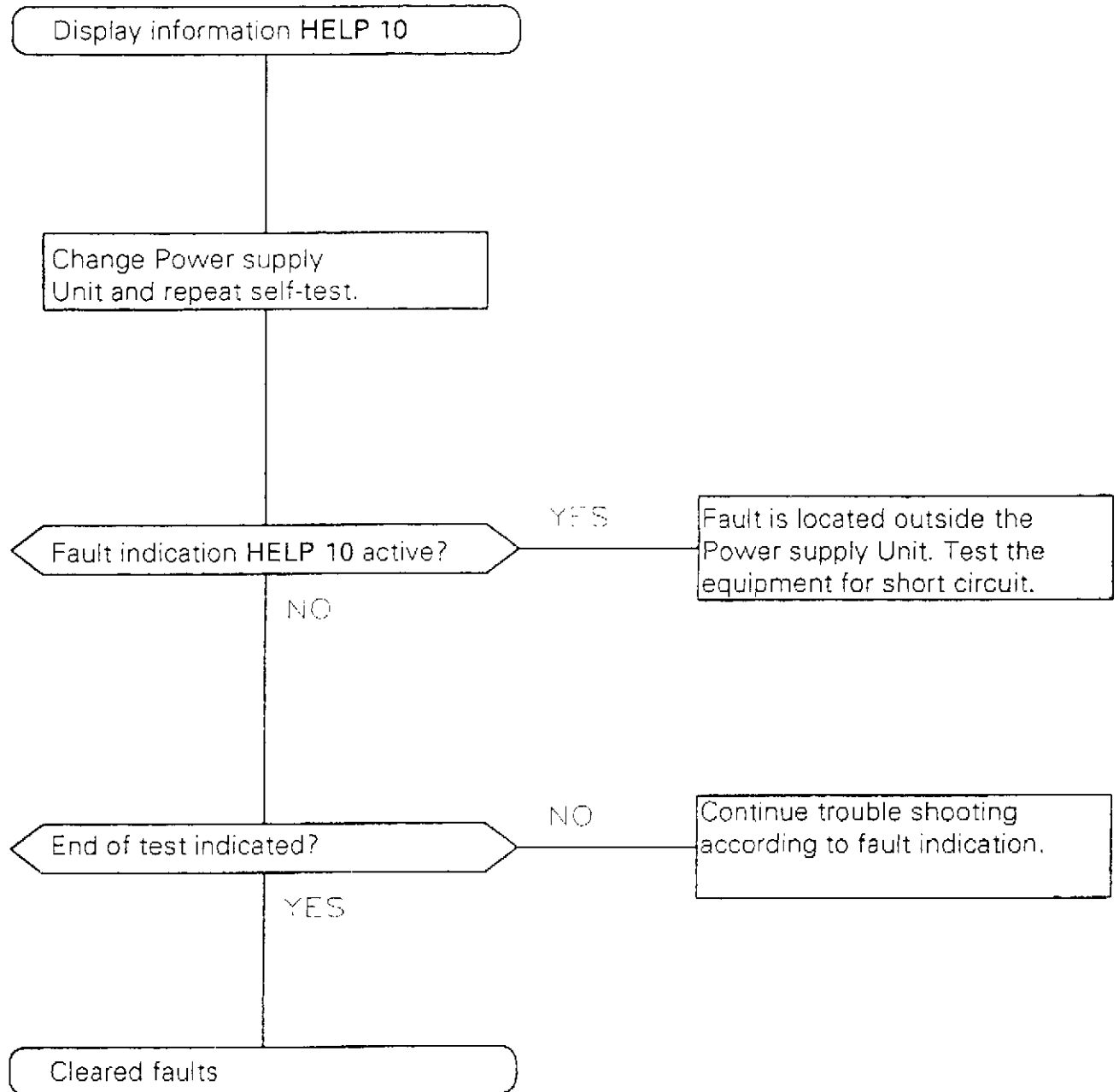
Fault indication HELP 08



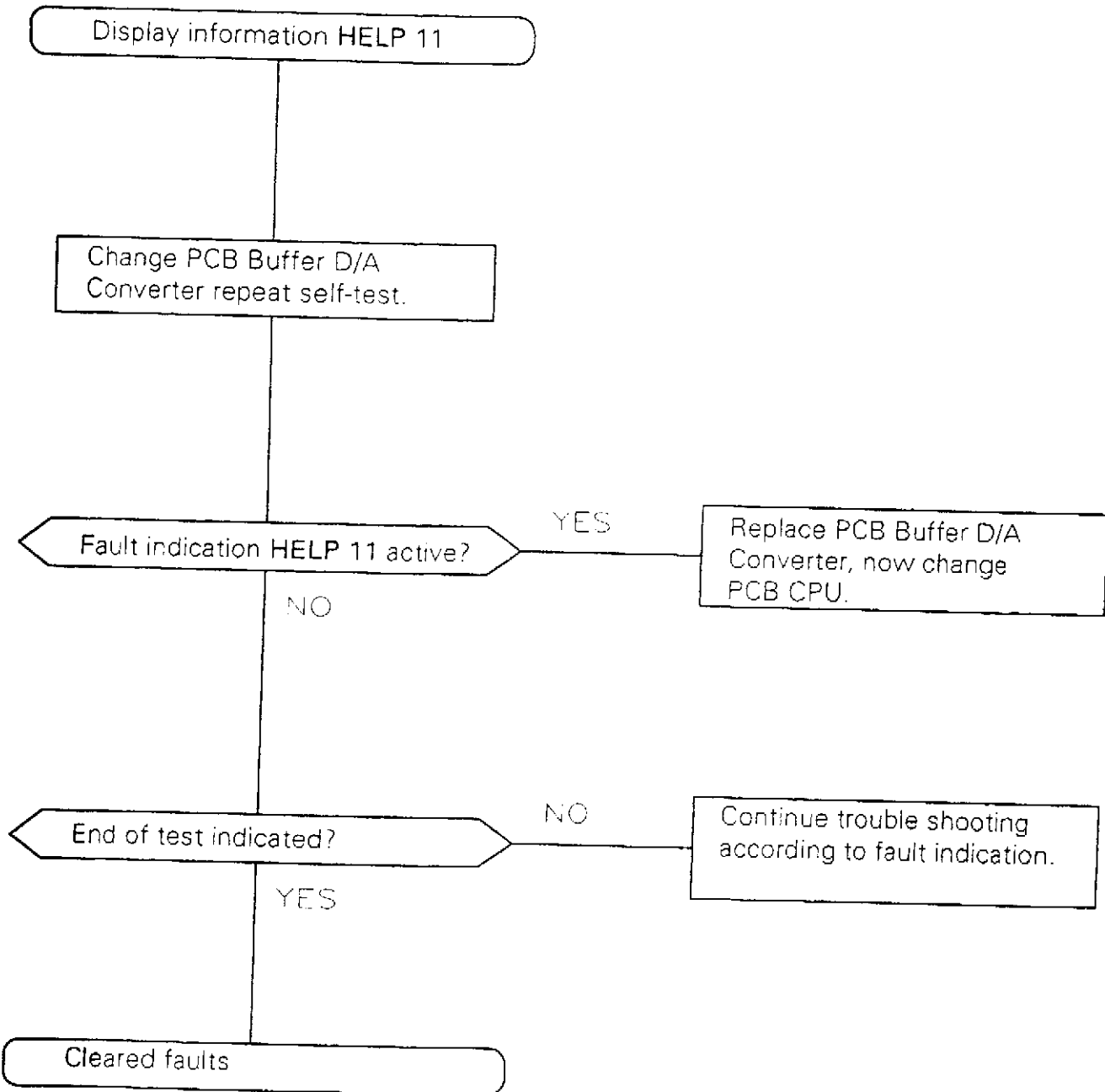
Fault indication HELP 09



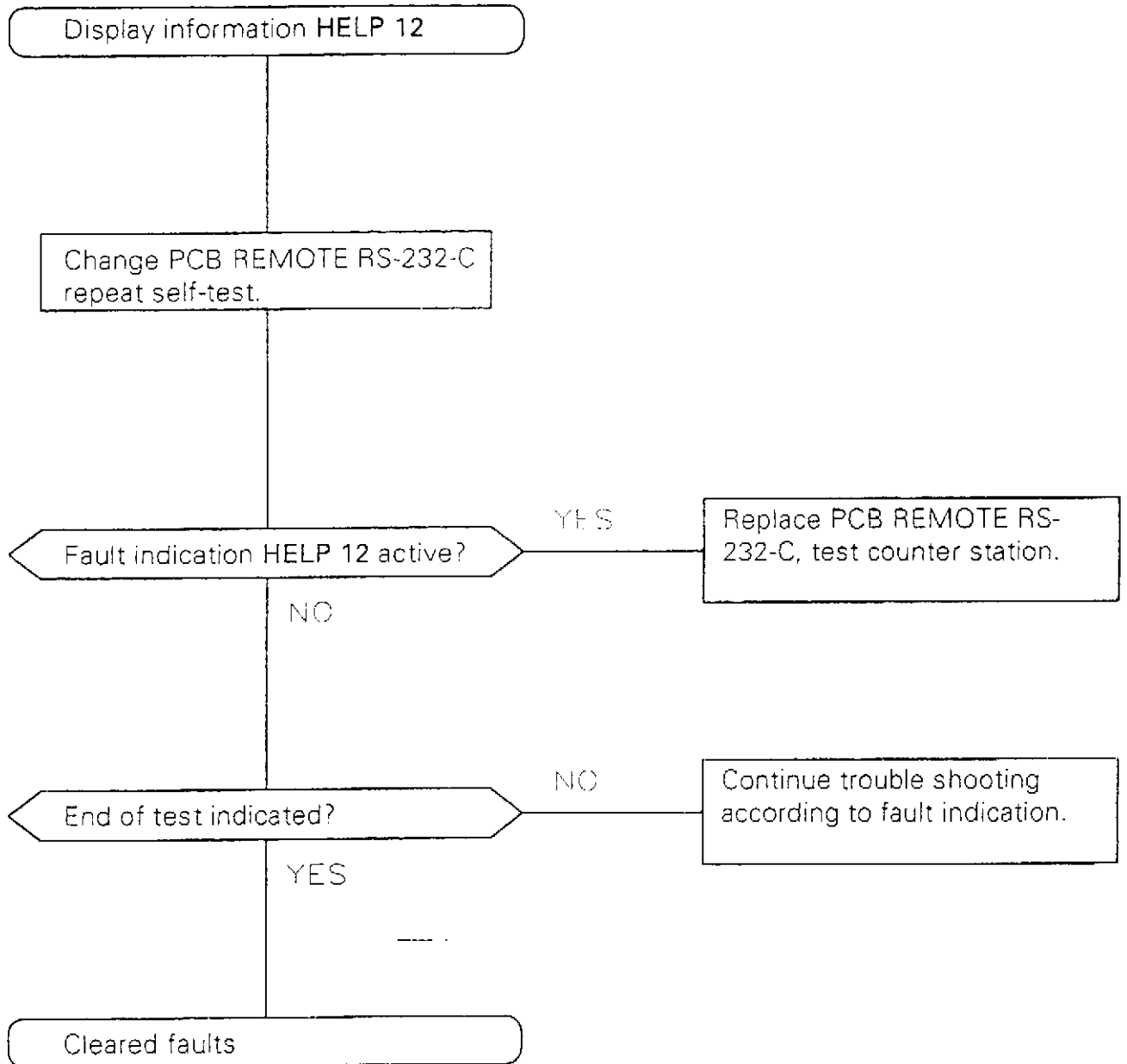
Fault indication HELP 10



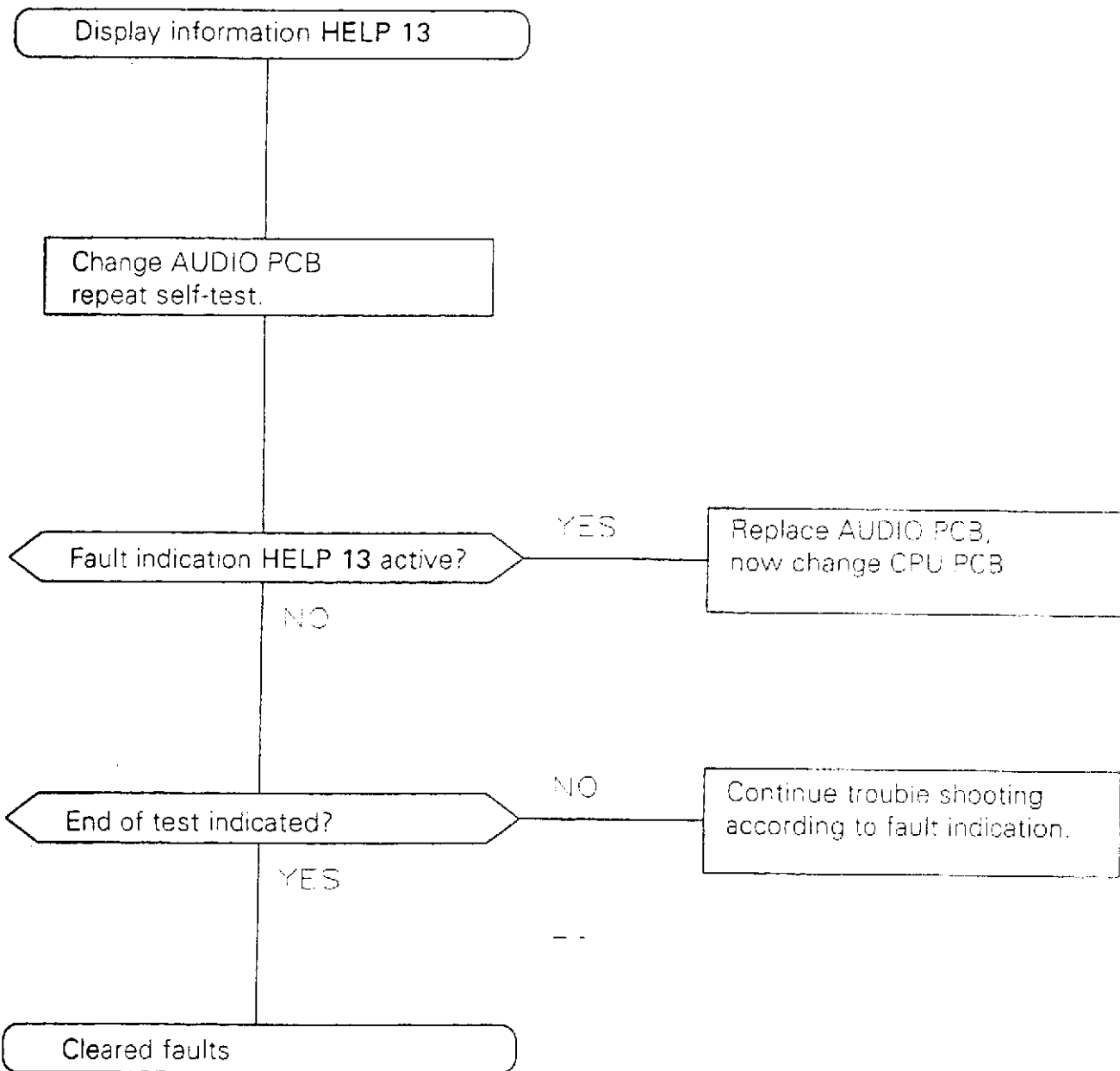
Fault indication HELP 11



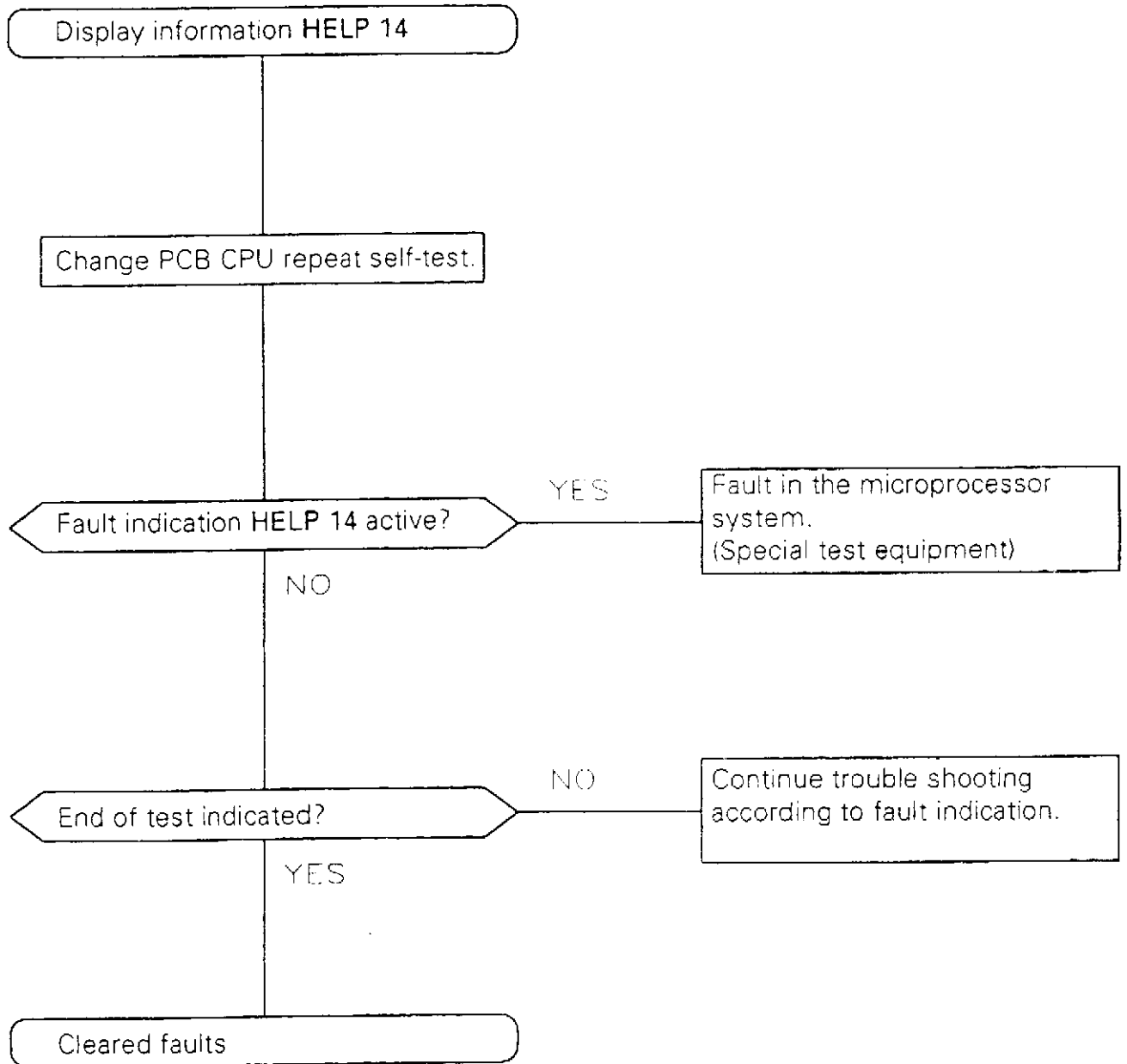
Fault indication HELP 12



Fault indication HELP 13

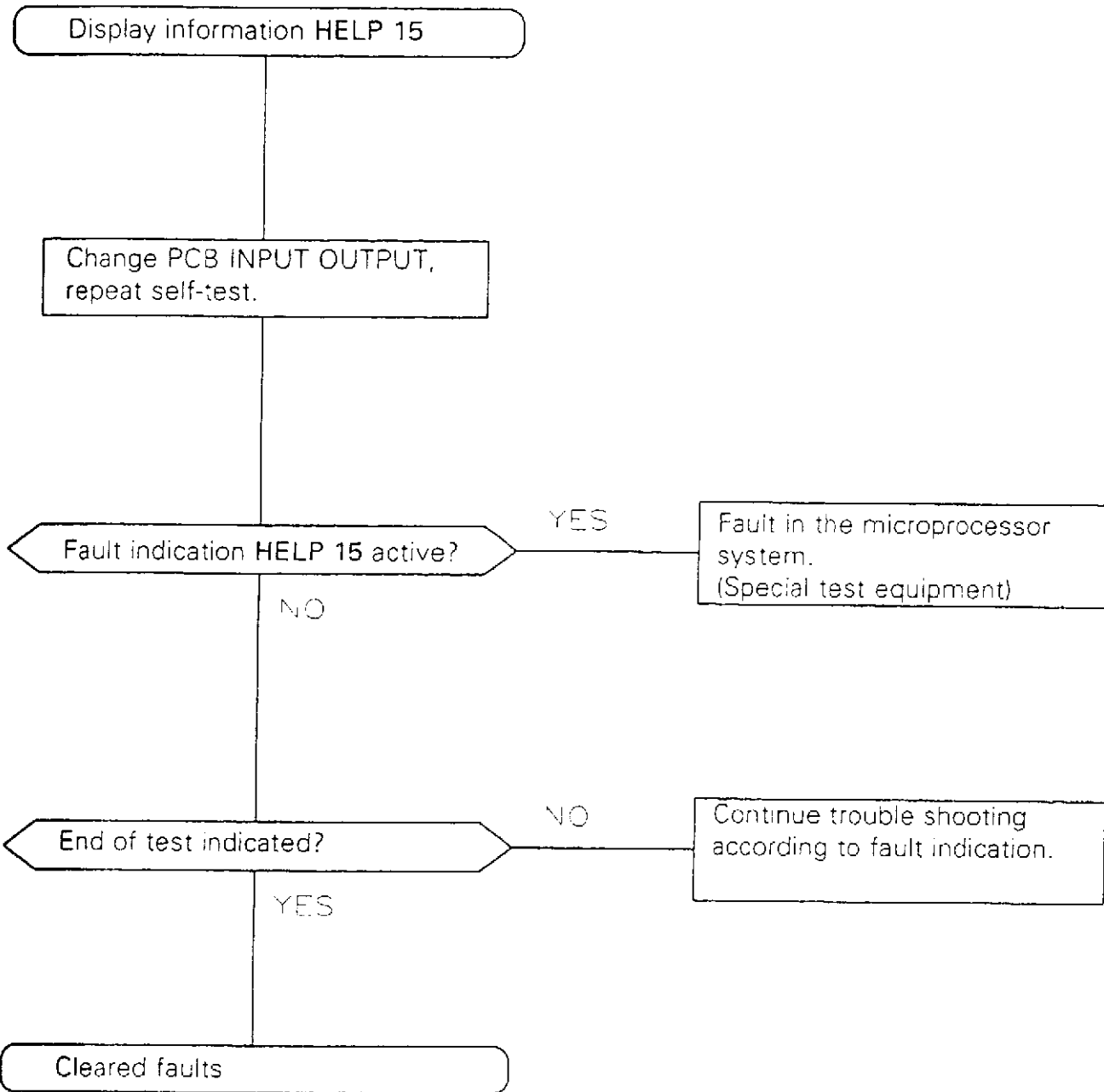


Fault indication HELP 14

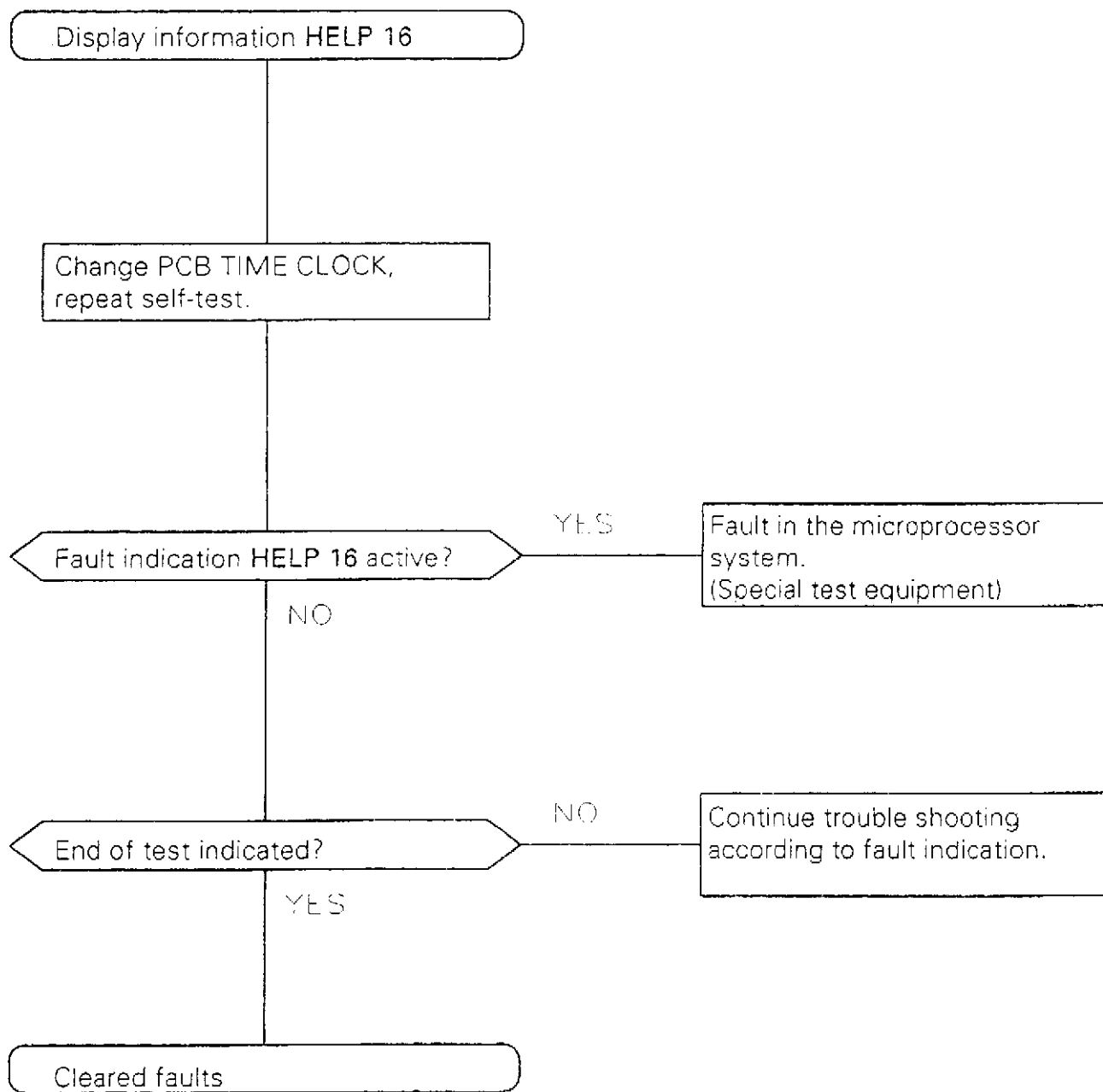


Fault indication HELP 15

The indication HELP 15 can be simulated by the operator (refer to page 3-31).



Fault indication HELP 16



3.1.5 Go/NoGo Test

In case a locally operated receiver is fitted with the option RS 232, a BITE test can be started externally via the remote connector and the result is also being transmitted at this remote connector (Go/NoGo test).

For this Go/NoGo test the following conditions must be set:

- RS 232 option must be fitted
- switch S 2 on RS 232 PCB must be set to position 600 Baud (pull down for DSR)
- switch S 1 on Interconnection PCB must be switched to ON.
- switch S 2.1 on I/O PCB must be switched ON
- switch S 2.2 on I/O PCB must be switched ON

The BITE test is started by sending a high going signal (+12 V) to the DSR input (pin 6) of the remote receptacle.

After the test has finished, the result is being output on the DTR output (pin 20) of the remote receptacle.

pin 20 = +12 V means Go

pin 20 = - 12 V means NoGo

NOTE

During the test and while reading out the result at the DTR output the DSR input must be high (approx. 2 min).

3.1.6 Sequence of the AUTO TEST (BITE)

Testpoint HELP-No.	Group	Tested function	1	2	3	4	5	6
01 ---	Display	All LED's and 7-digit-indications.	off	---	2.5s	---	---	---
02 01 +40	Protector/Preselect.	Switching-on of the 20 dB-Attenuator with switched-on preselector.	>20dBm	AGC-short	0.5s	---	---	Testsignal 10 dB attenuated
03 01 +40	Protector/Preselect.	Switching-off of the 20 dB-Attenuator with switched-on preselector.	off	AGC-short	2.0s	---	---	
04 01 +40	Protector/Preselect.	Switching-on of the 20 dB-Attenuator with preselector switched-off.	>20dBm	AGC-short	0.5s	---	---	Testsignal 10dB attenuated
05 01 +40	Protector/Preselect.	Switching-off of the 20 dB-Attenuator with preselector switched-off.	off	AGC-short	2.0s	---	---	
06 11	Buffer-DA	Testpoints 06-11 with built-in preselector only: Reference voltage for presel. middle position.	off	AGC-short	0.5s	10	H	
07 01 +41	Preselect.	Pass-attenuation 1.6 MHz low pass at 1 MHz (comparison with pass attenuation=Pres.off)	-54dBm	AGC-short	4.0s	---	---	Testsignal 20dB attenuated (switched-on preselector)

REMARK

- 1 1 MHz-Test-Signal
- 2 AGC Setting
- 3 max. Testing time
- 4 HELP-Input TIME CLOCK PCB ST.D
- 5 Nominal level
- 6 Fault simulation

Testpoint HELP-No.	Group	Tested function	1	2	3	4	5	6
08 01 +42	Preselect.	Pass-attenuation 1.6 MHz at 3 MHz (comparison with pass attenuation=Pres.off)	-54dBm	AGC-short	4.0s	—	---	Testsignal 20dB attenuated (switched-on preselector)
09 01 +43	Preselect.	Pass-attenuation 4.8 MHz filter at 7 MHz (comparison with pass attenuation=Pres.off)	-54dBm	AGC-short	4.0s	—	---	Testsignal 20dB attenuated (switched-on preselector)
10 01 +44	Preselect.	Pass-attenuation 8-17 MHz filter at 11 MHz (comparison with pass attenuation=Pres.off)	-54dBm	AGC-short	4.0s	—	---	Testsignal 20dB attenuated (switched-on preselector)
11 01	Preselect.	Pass-attenuation 17-30 MHz filter at 19 MHz	-54dBm	AGC-short	4.0s	—	---	
12 05	Demodul.	Control voltage test	-54dBm	AGC-short	0.5s	21	11	30dB in front of Demodulator
13 02	1. Mixer	Testpoints 13-16 with filter 3 kHz: Amplification with sufficient IF-level	-54dBm	max.ampl.	0.5s	15	H	10dB in front of 1. Mixer
14 03	2. Mixer	Amplification with sufficient IF-level	-54dBm	min.ampl.	0.5s	18	H	10dB in front of 2. Mixer
15 02	1 Mixer	Control with insufficient IF-level	-54dBm	min.ampl.	0.5s	15	L	

REMARK

- 1 1 MHz-Test-Signal
- 2 AGC Setting
- 3 max. Testing time
- 4 HELP-Input TIME CLOCK PCB ST.D
- 5 Nominal level
- 6 Fault simulation.

Testpoint HELP-No.	Group	Tested function	1	2	3	4	5	6
16 03	2. Mixer	Control with insufficient IF-level	-54dBm	max.ampl.	0.5s	18	L	
17 02	1. Mixer	Testpoints 17-24 with filter 6 kHz: Amplification with sufficient IF-level	-54dBm	max.ampl.	0.5s	16	H	10dB in front of 1. Mixer
18 03	2. Mixer	Amplification with sufficient-IF-level	-54dBm	max.ampl.	0.5s	15	H	10dB in front of 2. Mixer
19 05	Demodul.	AGC-Generation and IF-level	-54dBm	max.ampl.	0.5s	21	H	
20 06	525/10kHz	IF-output level	-54dBm	max.ampl.	0.5s	14	H	10dB in front of IF-output. Cass.
21 02	1. Mixer	Control with insufficient IF-level	-54dBm	min.ampl.	0.5s	15	L	
22 03	2. Mixer	Control with insufficient IF-level	-54dBm	min.ampl.	0.5s	18	L	
23 05	Demodul.	AGC-Generation and IF-level	-54dBm	min.ampl.	7.0s	21	L	
24 06	525/10kHz*	IF-output level	-54dBm	min.ampl.	0.5s	14	L	
25 04	Filter/board	Connect filter 6 kHz on 2. Mixer	-54dBm	AGC-short	1.0s	---	---	
26 04	Filter/board	Pass attenuation (filter 2,4 kHz)	-54dBm	AGC-short	1.0s	---	---	

* only tested if fitted (S 1/3 and S 2/1 on Audio II PCB)

REMARK

- 1 1 MHz-Test-Signal
- 2 AGC Setting
- 3 max. Testing time
- 4 HELP-Input: TIME CLOCK PCB ST.D
- 5 Nominal level
- 6 Fault simulation

Testpoint HELP-No.	Group	Tested function	1	2	3	4	5	6
27 04	Filterboard	Pass attenuation (filter 1,5kHz)	-54dBm	AGC-short	1.0s	--	--	
28 04	Filterboard	Pass attenuation (filter 0,6 kHz)	-54dBm	AGC-short	1.0s	--	--	
29 04	Filterboard	Pass attenuation (filter 0,3 kHz)	-54dBm	AGC-short	1.0s	--	--	
30 04	Filterboard	Pass attenuation (filter 0,15 kHz)	-54dBm	AGC-short	1.0s	--	--	
31 04	Filterboard	Pass attenuation (filter 0,1 kHz)	-54dBm	AGC-short	1.0s	--	--	
32 15	I/O PCB	The AGC voltage difference between selected Filter and Bypass must not exceed 10 dB. Function of Input/Output Integrated Circuits P10 1: Write/Read test with A4 and B4-B7 P10 2: Write/Read test with B0-B7 P10 3: Write/Read test with B0, check for valid data at A0/A1 P10 4: Check for valid data at A0-A3	-54dBm	AGC-short	0.02s	--	--	Use an attenuator in front of the Filterboard during measuring of individual filters.

REMARK

- 1 1 MHz-Test-Signal
- 2 AGC Setting
- 3 max. Testing time
- 4 HELP-Input TIME CLOCK PCB ST.D
- 5 Nominal level
- 6 Fault simulation

Testpoint HELP-No.	Group	Tested function	1	2	3	4	5	6
33 63	TTY-Conv.	Test of the connected TTY-Converter (if present) Failure indication of the converter: HELP 61 voltage failure HELP 62 RAM failure HELP 63 Mark-Space-failure	-54dBm	AGC-short	1.2s	--	--	
34 13	Audio PCB	Testpoint 34-35 during complete test: (only when S2.4 on I/O-Print is being switched-on)	>20dBm	AGC-short	1.0s	--	--	
35* 15	I/O PCB	Test of AF-line by tone generation Condition: Loudspeaker switched-on, volume control adjusted.	>50s					Press two keys simultaneously for a short time or
36* 15	I/O PCB	Quiescent position of frequency tuning cct.	>50s					turn the fly wheel knob only once during the test.

REMARK

- 1 1 MHz-Test-Signal
- 2 AGC Setting
- 3 max. Testing time
- 4 HELP-Input TIME CLOCK PCB ST.D
- 5 Nominal level
- 6 Fault simulation

* Only possible when switch S 2/4 on I/O PCB is 'ON'

3.2 Servicing

3.2.1 General

3.2.1.1 Removal of the receiver out of the cabinet

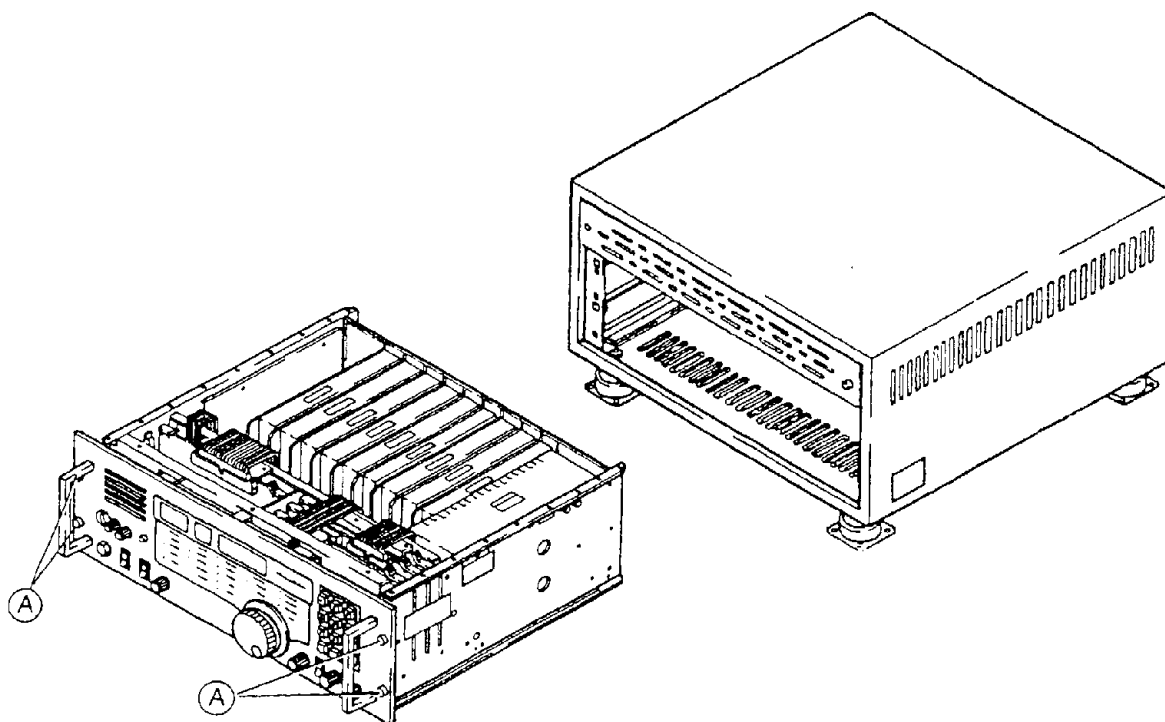


Fig. 3-1 Receiver RX 1001 M/RX 5001with Cabinet

- switch off the receiver
- unscrew mounting screws (A) on the front panel. Captive screws are used.
- remove all cable connections on the rear panel -refer to fig. 3-2-

NOTE

Receivers of the series RX 1001 M/RX 5001 have a data protection; if the mains connector is disconnected from the power supply all stored data are deleted.

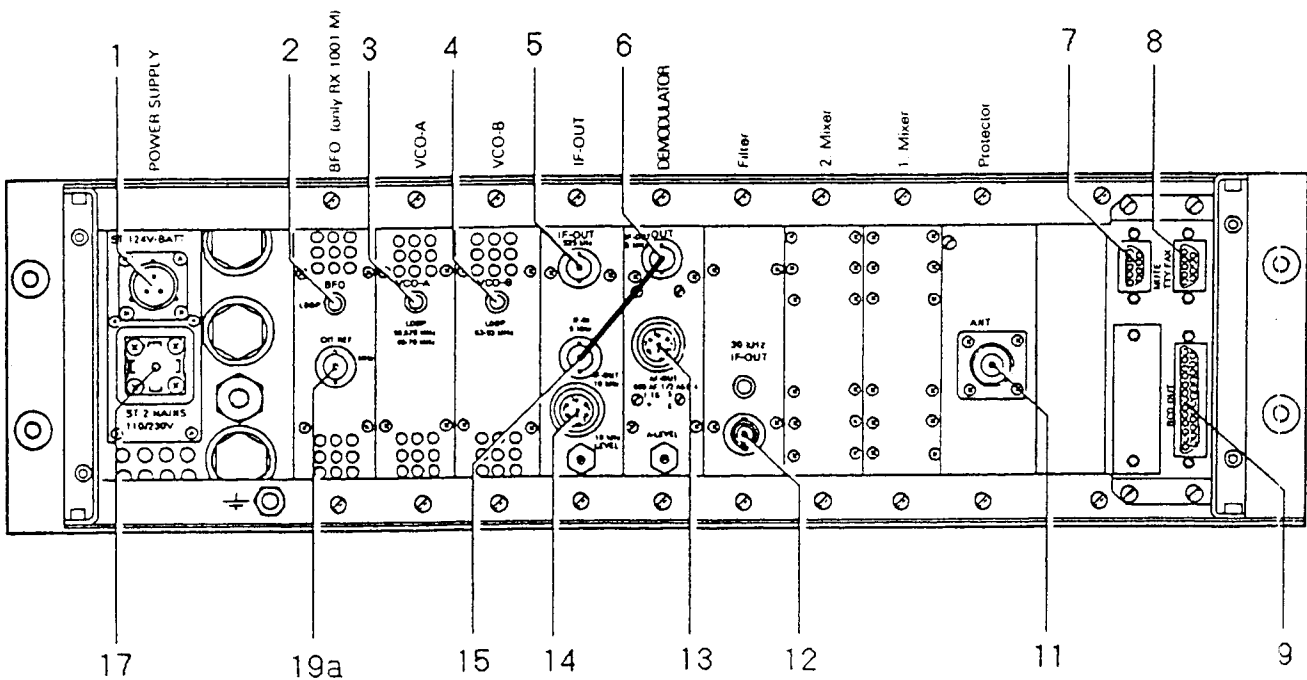
- remove the receiver out of the cabinet by the handles

CAUTION

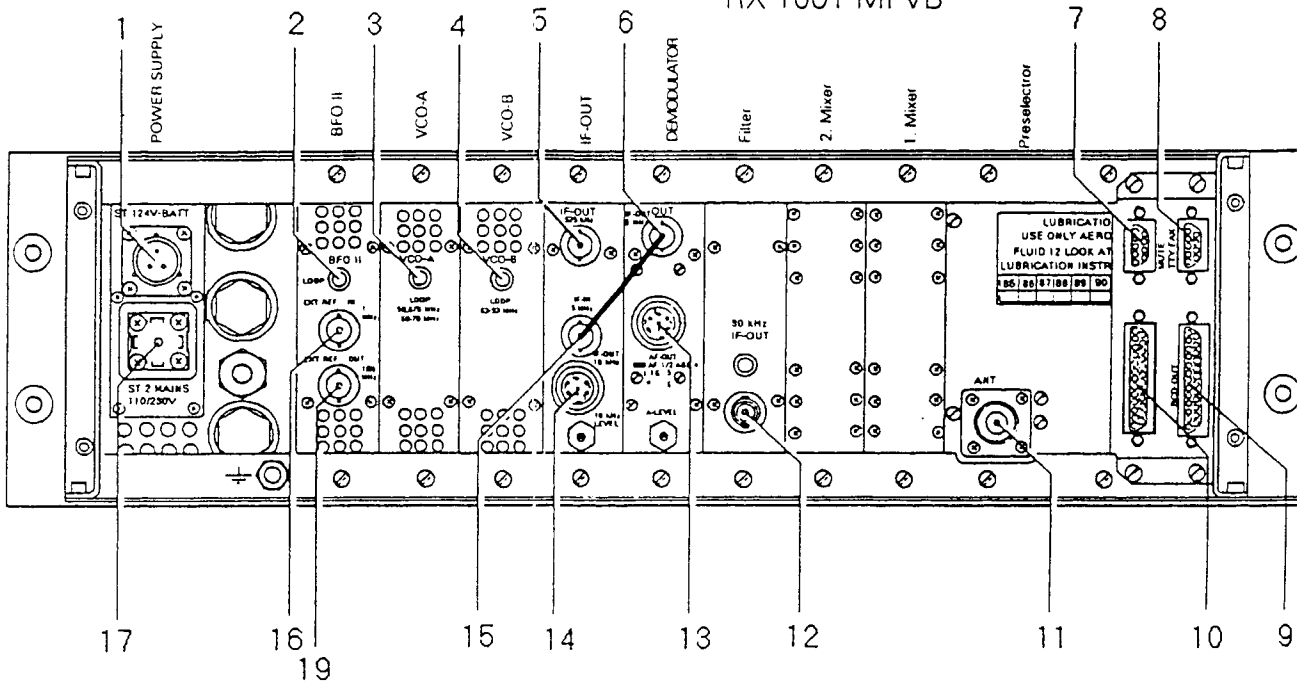
Receiver weight approx. 17 kg

- 1 ST 1 24 V-BATT
- 2 BFO-PLL locked LED
- 3 VCO A PLL's locked LED
- 4 VCO B PLL locked LED
- 5 Bu 2 525 kHz IF-OUTPUT
- 6 St 1 IF-IN
- 7 St F Extern-Connector
- 8 St E TTY-FAX Data Connector (TG 1001)
- 9 Bu 8a BCD-OUT-Connector
- 10 RS 232-C Remote Connector
- 11 Antenna input
- 12 Bu 4 30 kHz IF-OUT
- 13 Bu 2 AF-OUT
- 14 Bu 3 10 kHz IF-OUT
- 15 Bu 1 5 MHz IF-IN
- 16 Bu 4 1/10 MHz Ext. REF IN
- 17 St 2 MAINS
- 19 Bu 10 1/10 MHz Ext. REF OUT
- 19a Bu 4 1 MHz Ext. REF IN
- 20 Bu 2 AF 2-OUT

RX 5001 with option IF-OUT
RX 1001 MB



RX 5001 with option Preselector, Remote
and IF-OUT
RX 1001 MFVB



RX 5001 with option Preselector, Remote
and ISB-Demodulator

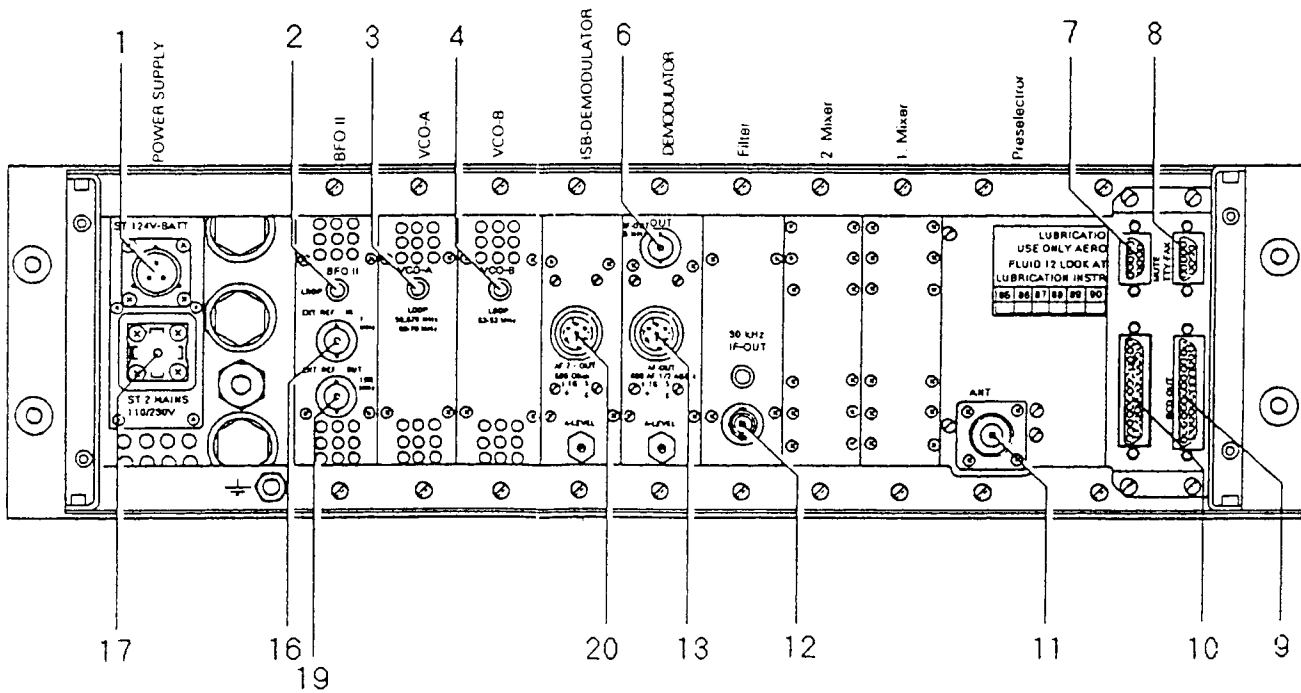


Fig. 3-2
Receiver Rear Panel

3.2.1.2 Preparation for servicing

Receivers of the series RX 1001 M/RX 5001 are supplied with an accumulator, which supplies the RAM's and clock in case of power failure. The accumulator has a capacity of 12 days. Afterwards all data in the RAM's are deleted-

NOTE

To protect the accumulator against deep discharge, switch off the accumulator during servicing.

3.2.1.3 Switching off the accumulator

- Remove the receiver out of the cabinet.
- At the right hand side of the top cover you will find a DIP switch, next to this a note shows the operation.
- see fig. 3-3

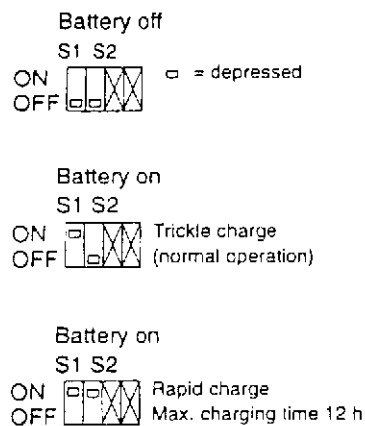


Fig. 3-3 Charging of the Built-in Accumulator

NOTE

A fully charged battery can maintain time and RAM content for 12 days. Never use quick charge setting with a mains plug which has a missing link (pin 3 and GND)

3.2.1.4 Opening of the receiver

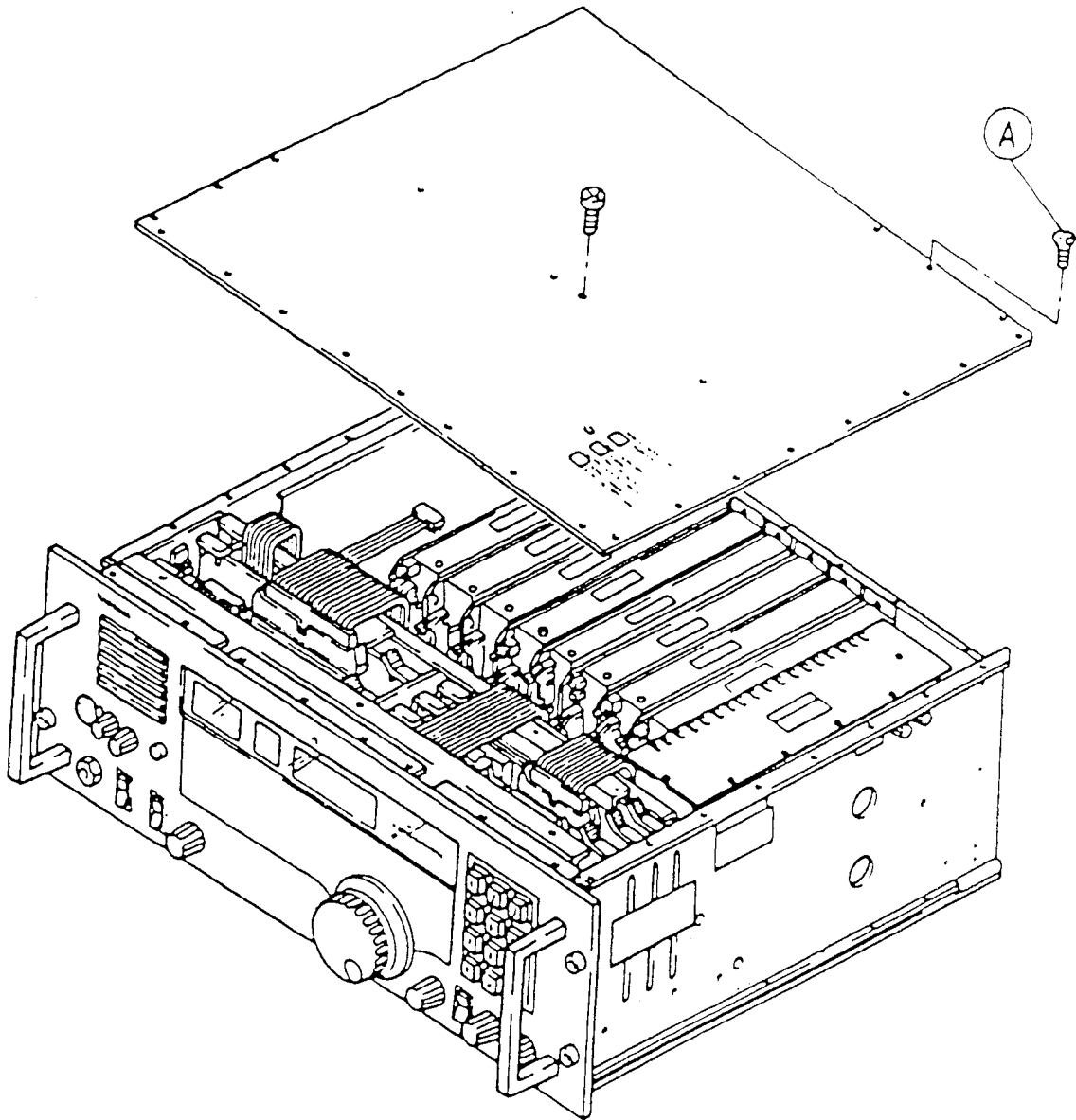


Fig. 3-4 Receiver in -Opened

- unscrew 35 pieces mounting screw (A), to remove the top cover.

3.2.1.5 Checking the available mains voltage

The receivers series RX 1001 M / RX 5001 can be connected to different mains voltages.

Before connecting the receiver to mains check the set mains voltage of the receiver see fig. 3-5.

- Remove the receiver completely out of the cabinet.
- On the right side wall locate the fuse cover of the mains voltage fuse
- see fig. 3-5

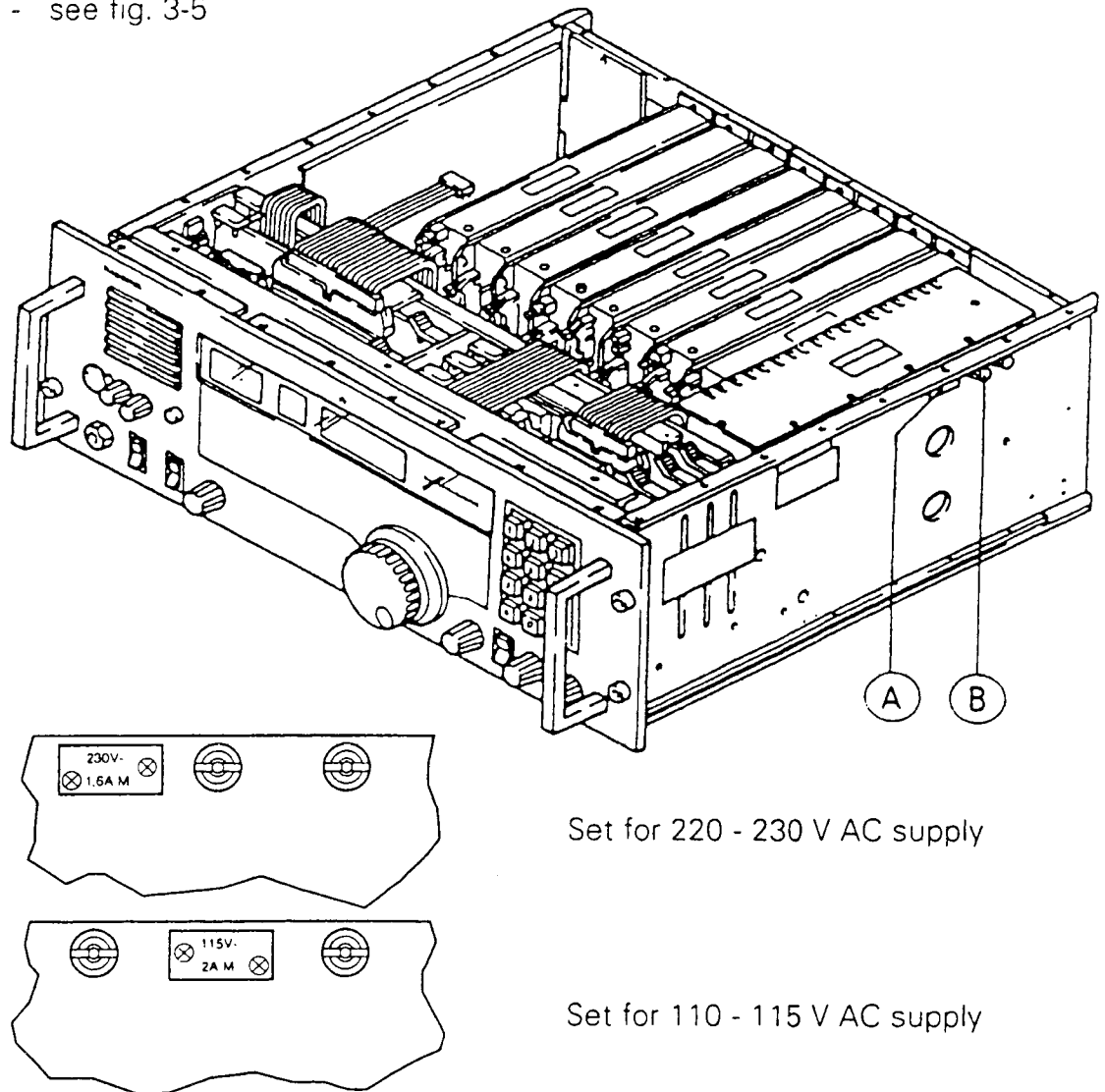


Fig. 3-5 Fuses for 115/230 V AC

WARNING

Does the voltage specified on the fuse label (A) match the available supply voltage?

Conversion to 115 V AC supply voltage

- Unscrew fuse cap (B)
- Remove fuse label (A) covering the fuse for 115 V AC. Turn label over and use to cover 230 V AC. Replace fuse insert (use 2 AM, from spares bag if necessary) and screw fuse cap into the new fuse holder.

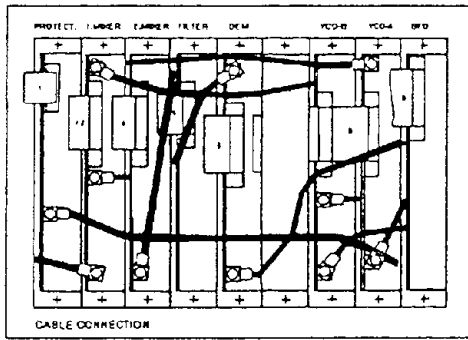
3.2.1.6 Cable connections inside the RX 1001 M / RX 5001

The subassemblies are connected together in different ways

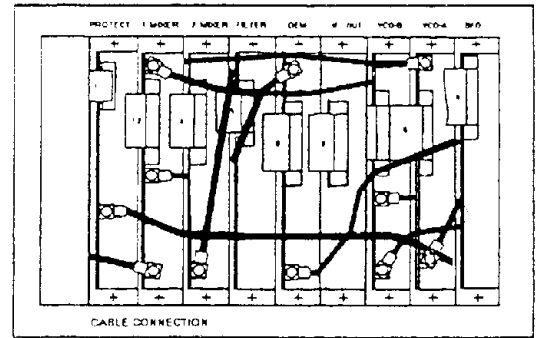
1. By a "motherboard". The subassemblies are plug-in modules, the wiring is on this motherboard.
2. By ribbon cable from the PCB-Buffer D/A Converter via the PCB-interconnection board to the subassemblies of the RF part.
3. By single ribbon cable & via two subassemblies.
4. By coaxial cables between subassemblies. For general views see fig. 3-6 to 3-8.
5. By a cable loom between power supply, motherboard, interconnection-board and various single components.

3.2.1.7 Interconnection of the Control Part

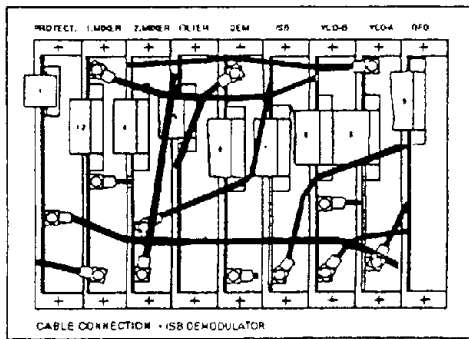
Fig. 3-9 shows the Control Part without Front Panel.



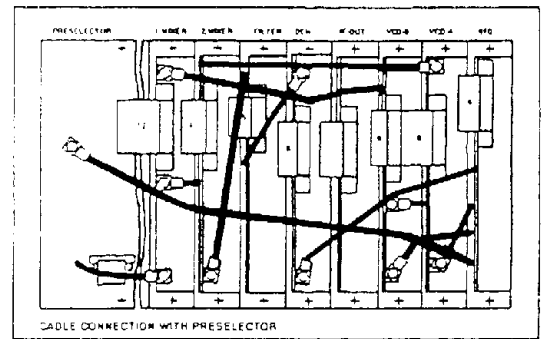
RX 5001 (basic version)



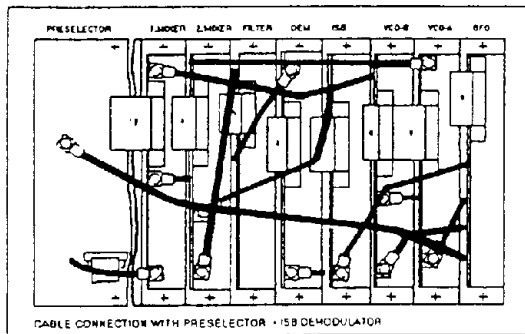
RX 5001 (with option IF-OUT)
RX 1001 MB (basic version)



RX 5001 (with option ISB-Demodulator)

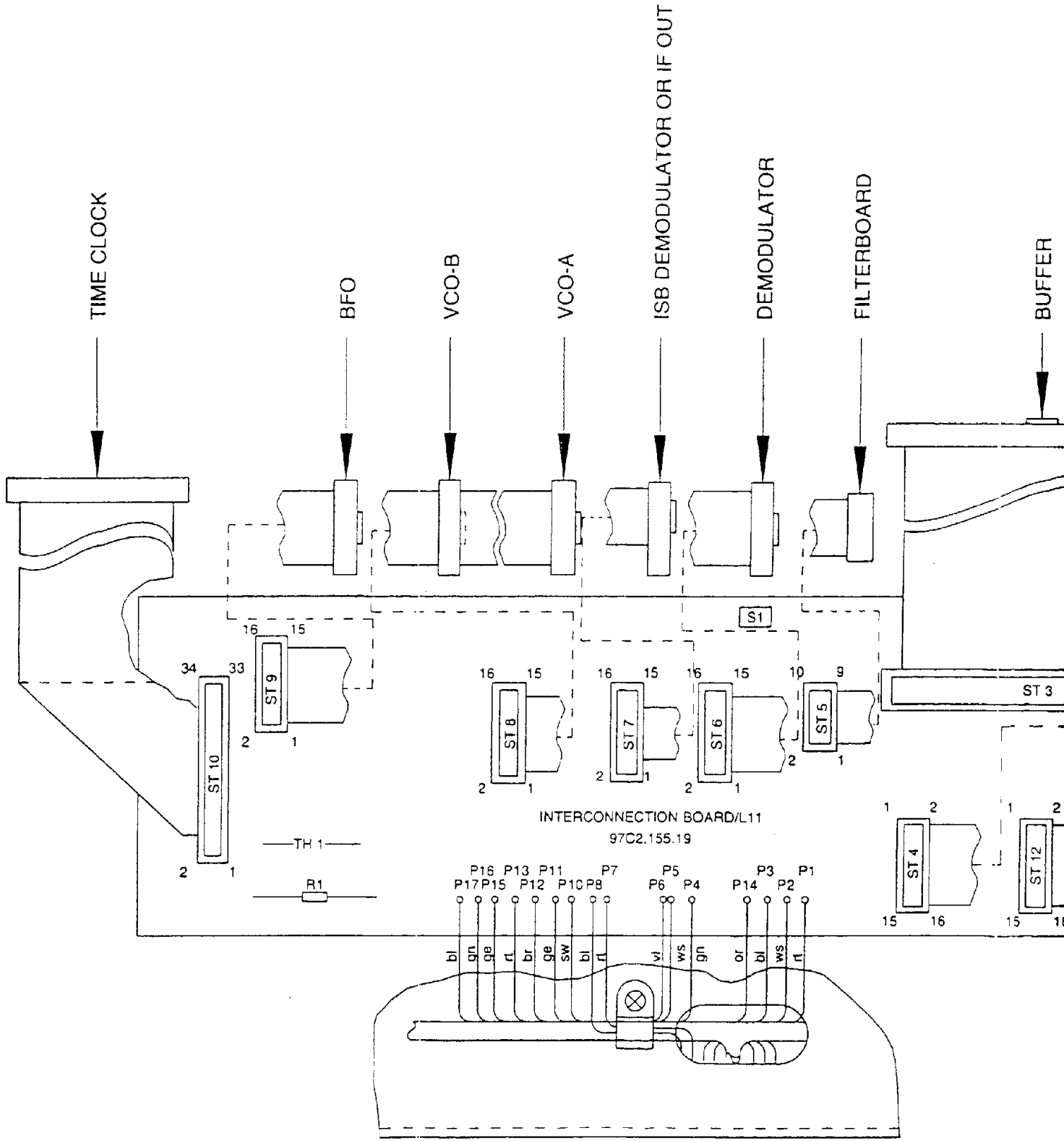


RX 5001 (with option Preselector
and IF-OUT) RX 1001 MVB



RX 5001 (with option Preselector and
ISB-Demodulator)

Fig. 3-6 Interconnection RF-Part



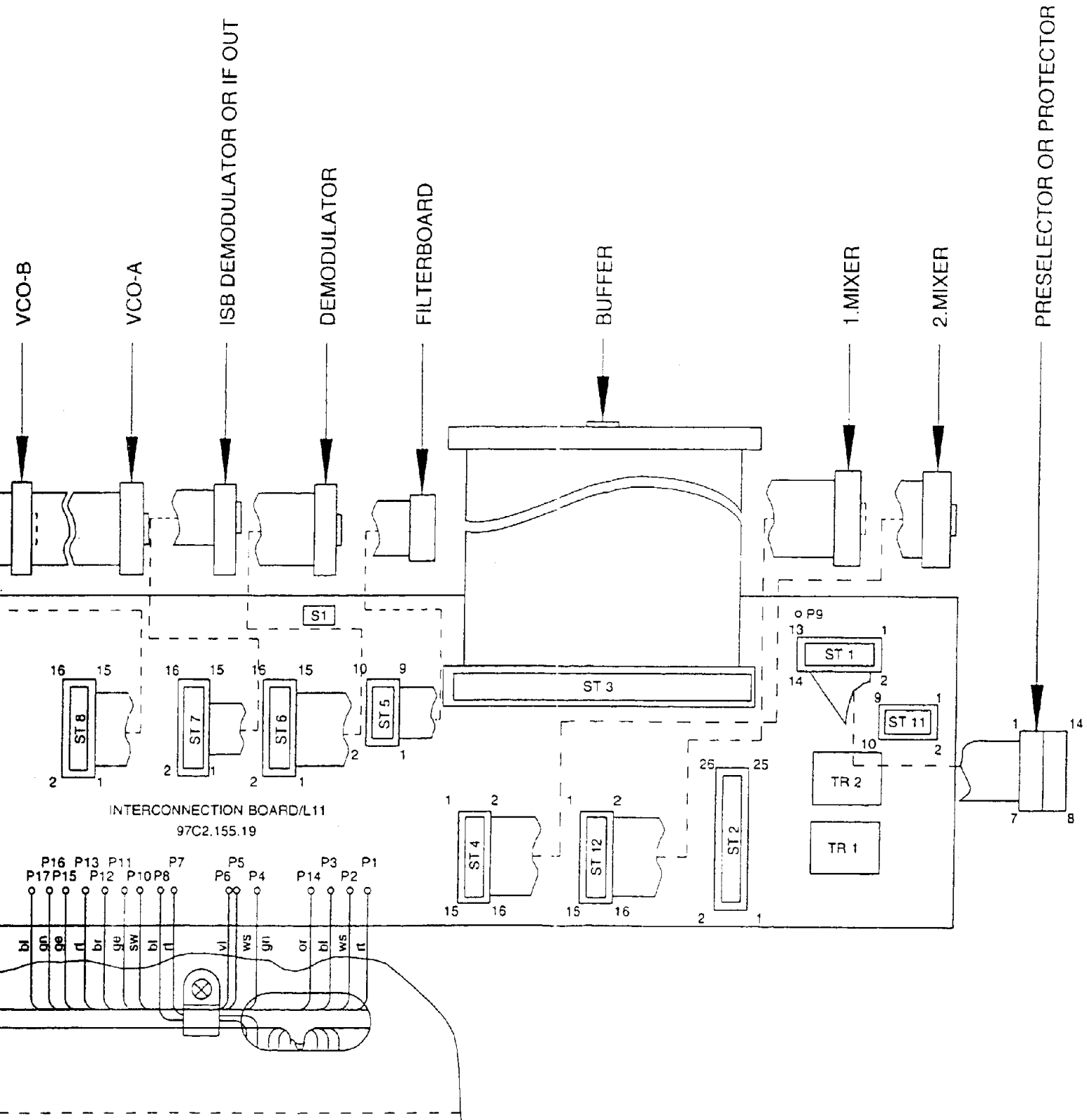
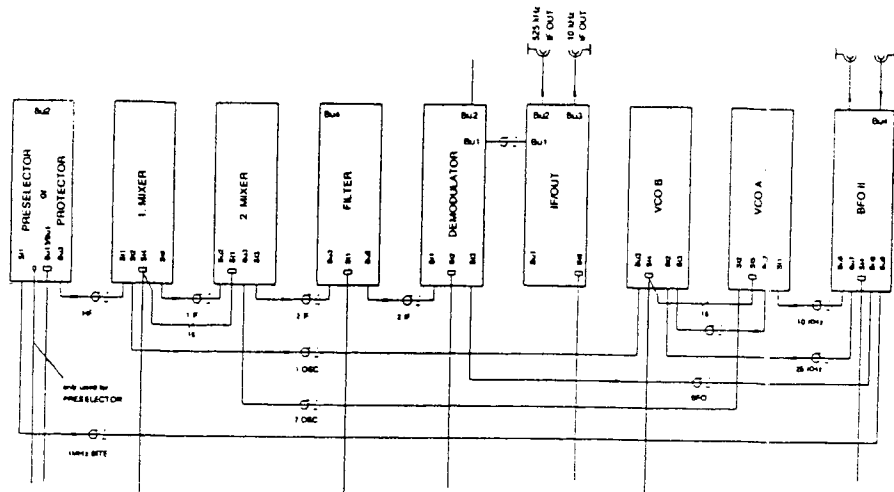


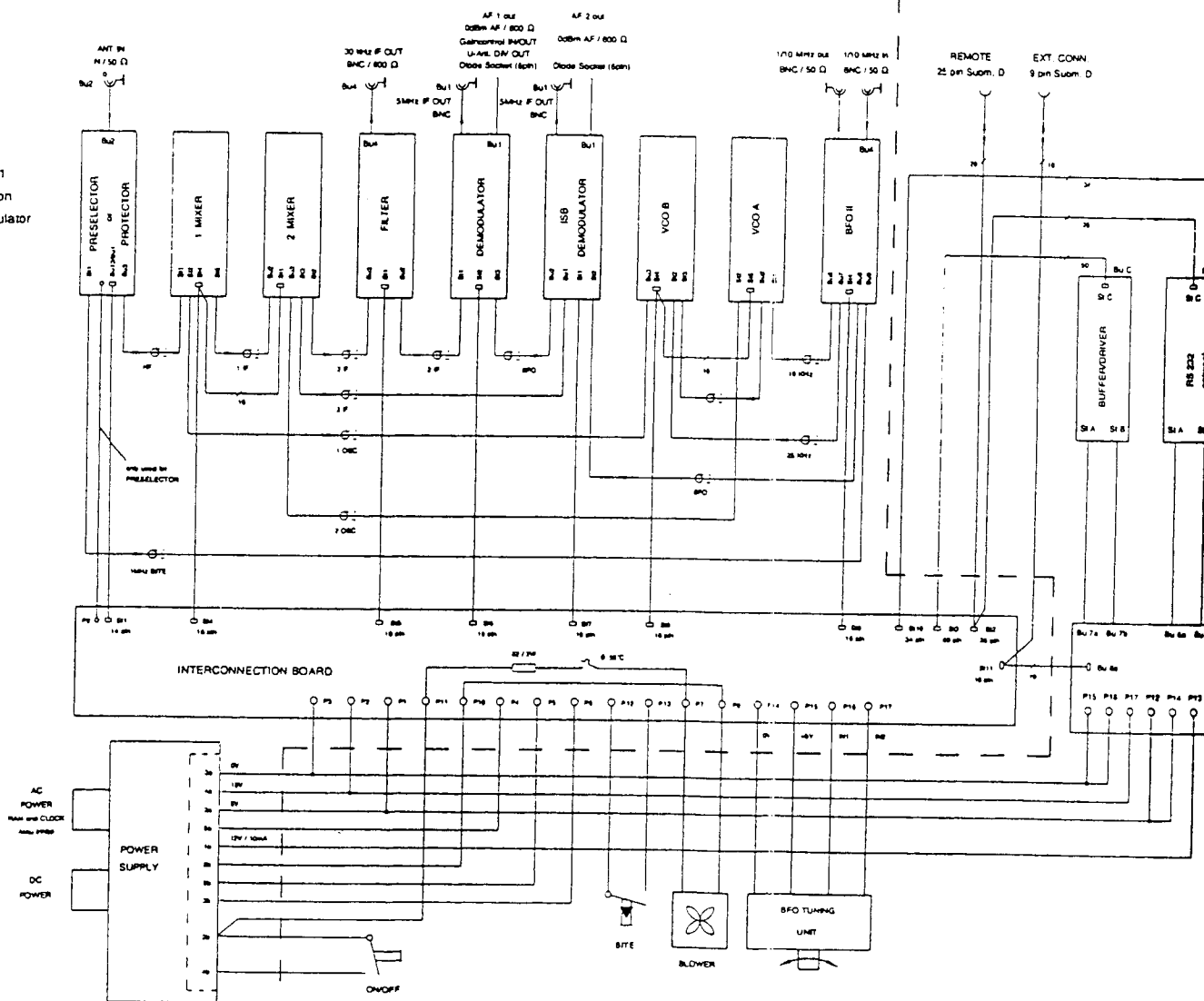
Fig. 3-7
3M Ribbon Cable
RX 1001 M / RX 5001

RX 1001 M
or
RX 5001
with option
IF / OUT



RX PART

RX 5001
with option
ISB Demodulator



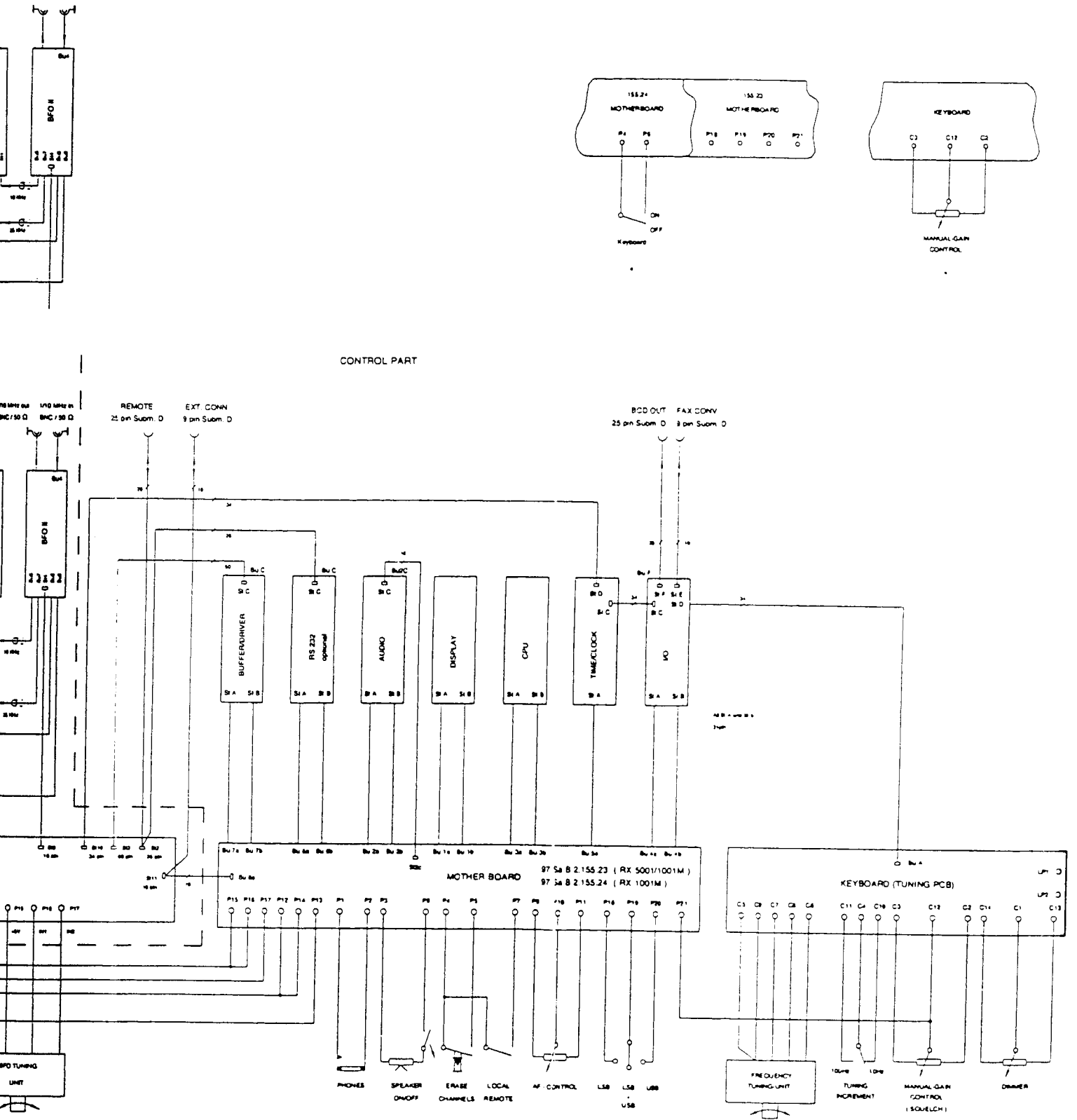
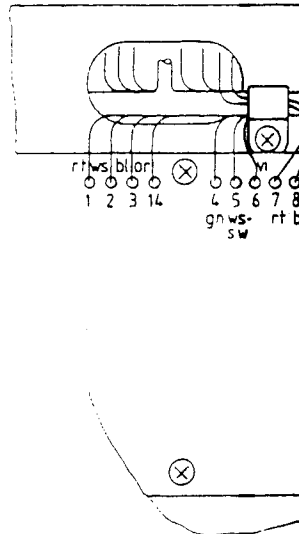
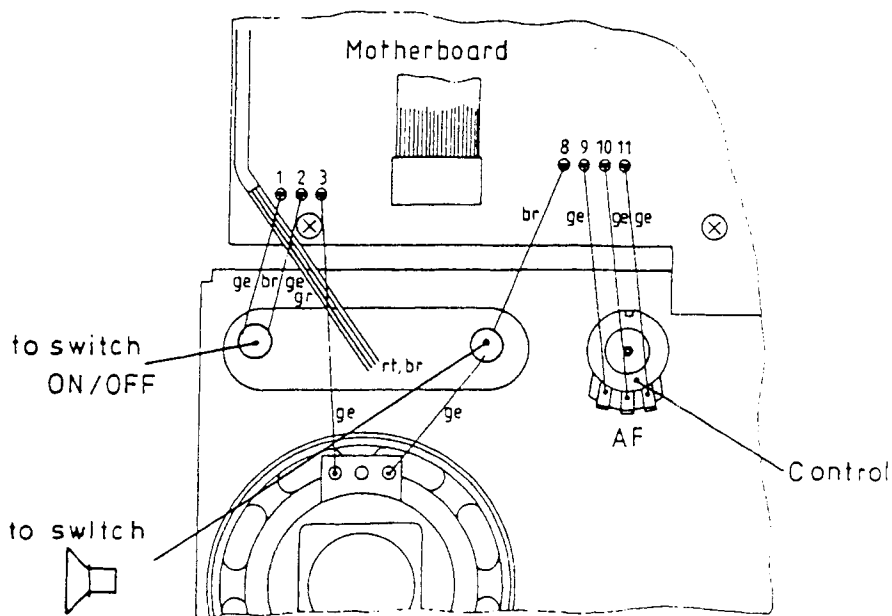
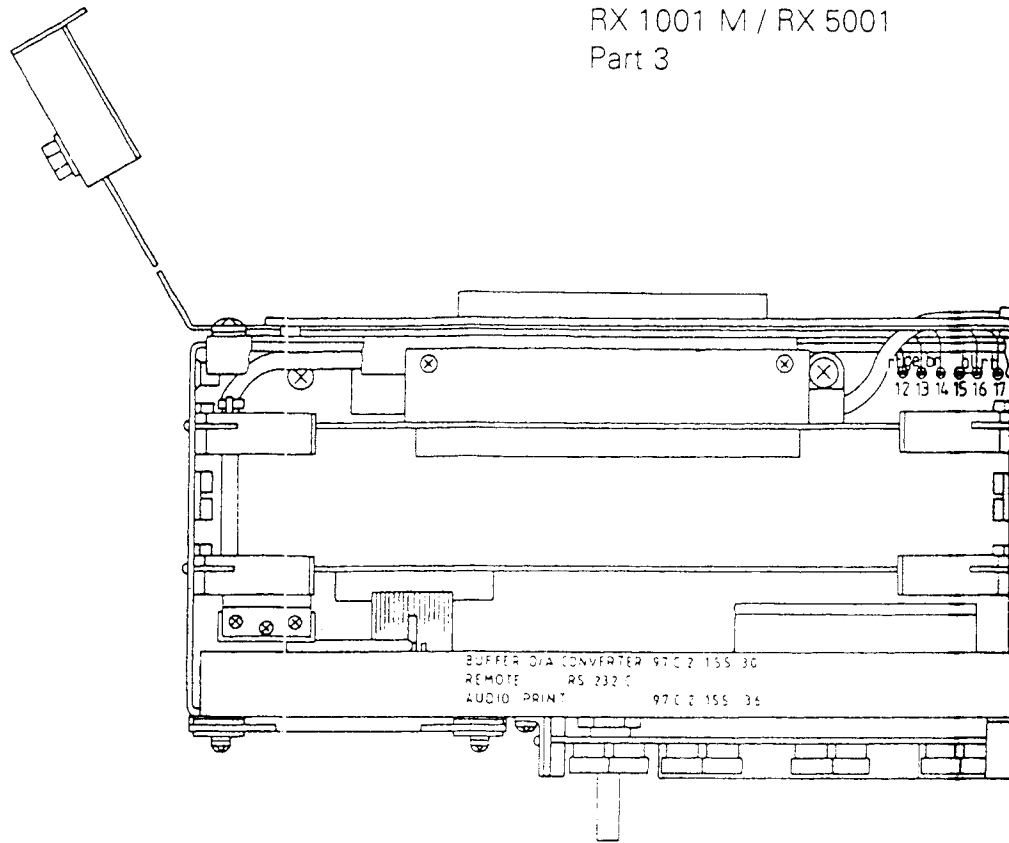


Fig. 3-8
Blockdiagram - Wiring-
RX 1001 M / RX 5001
* RX 1001 M only

RX 1001 M / RX 5001
Part 3



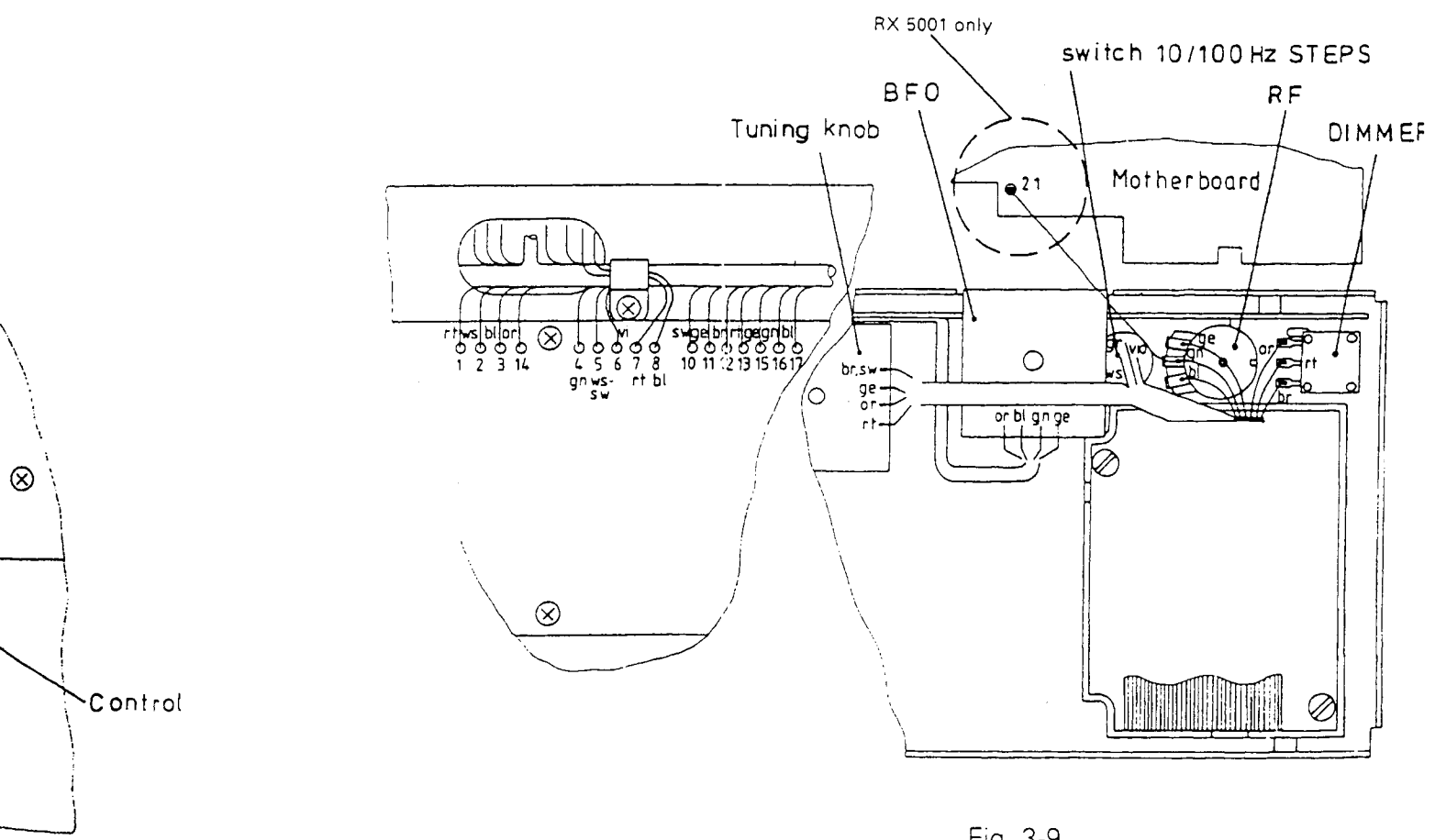
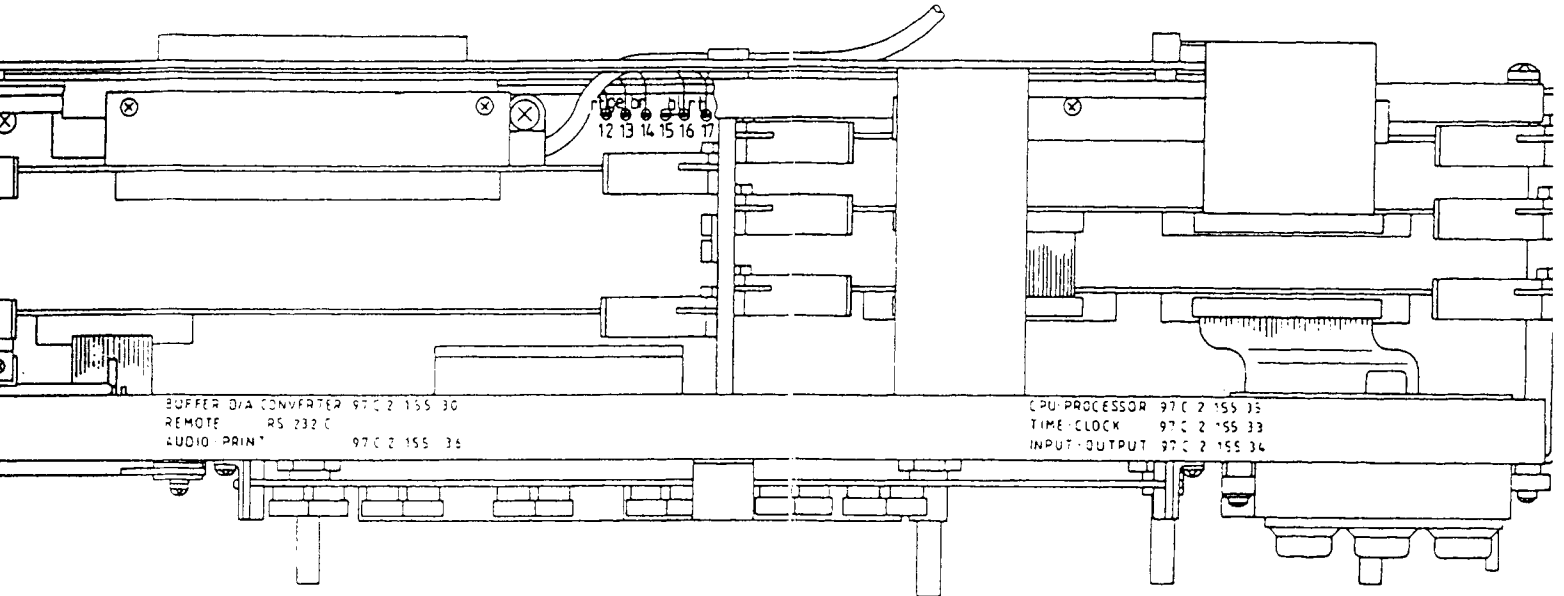


Fig. 3-9
Interconnection Control Part
RX 1001 M / RX 5001

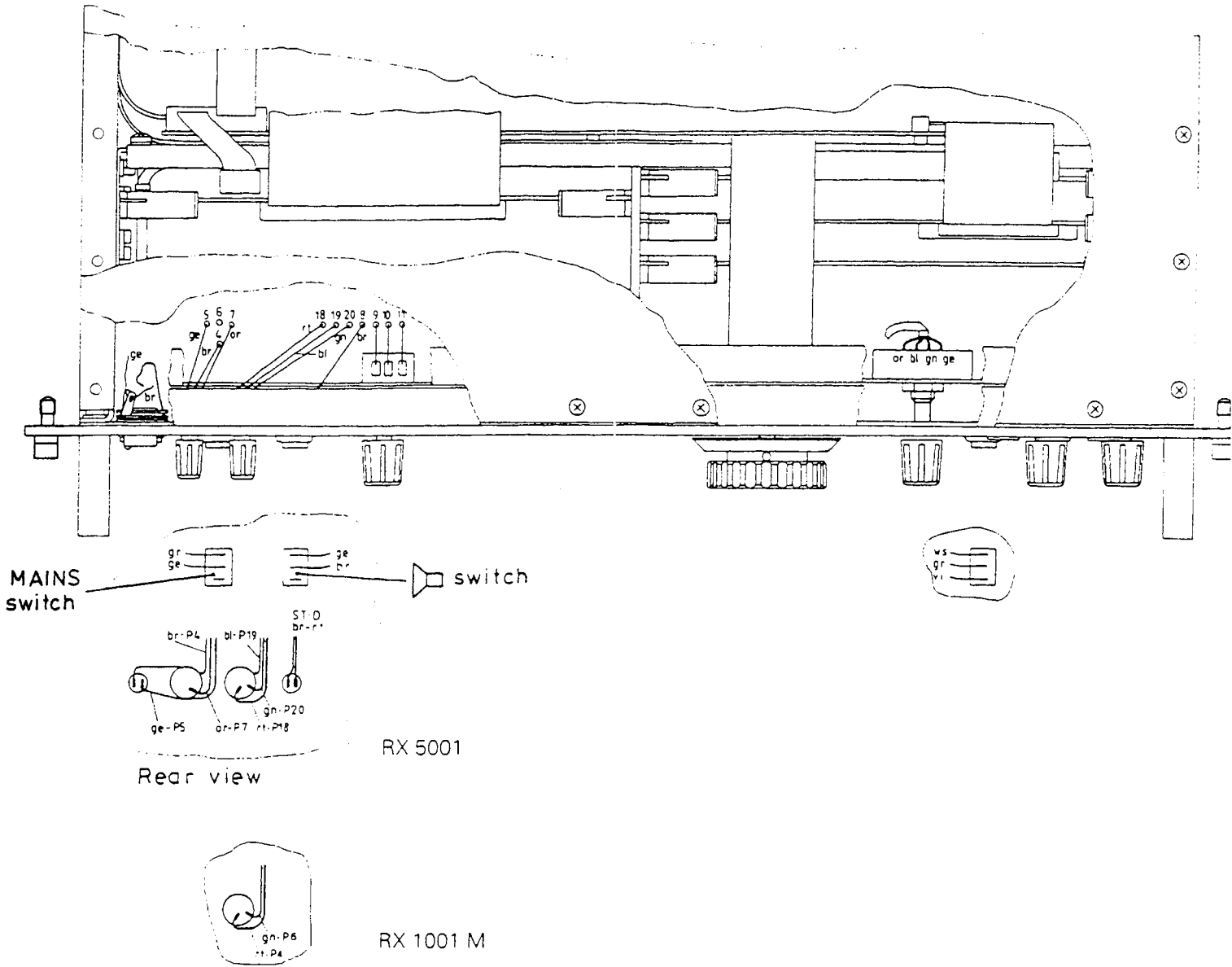


Fig. 3-10
Interconnection of the
Front Panel -Rear Side-
RX 1001 M / RX 5001

3.2.2 Removal and insertion of individual cassettes

3.2.2.1 Removal of a RF-Part's cassette

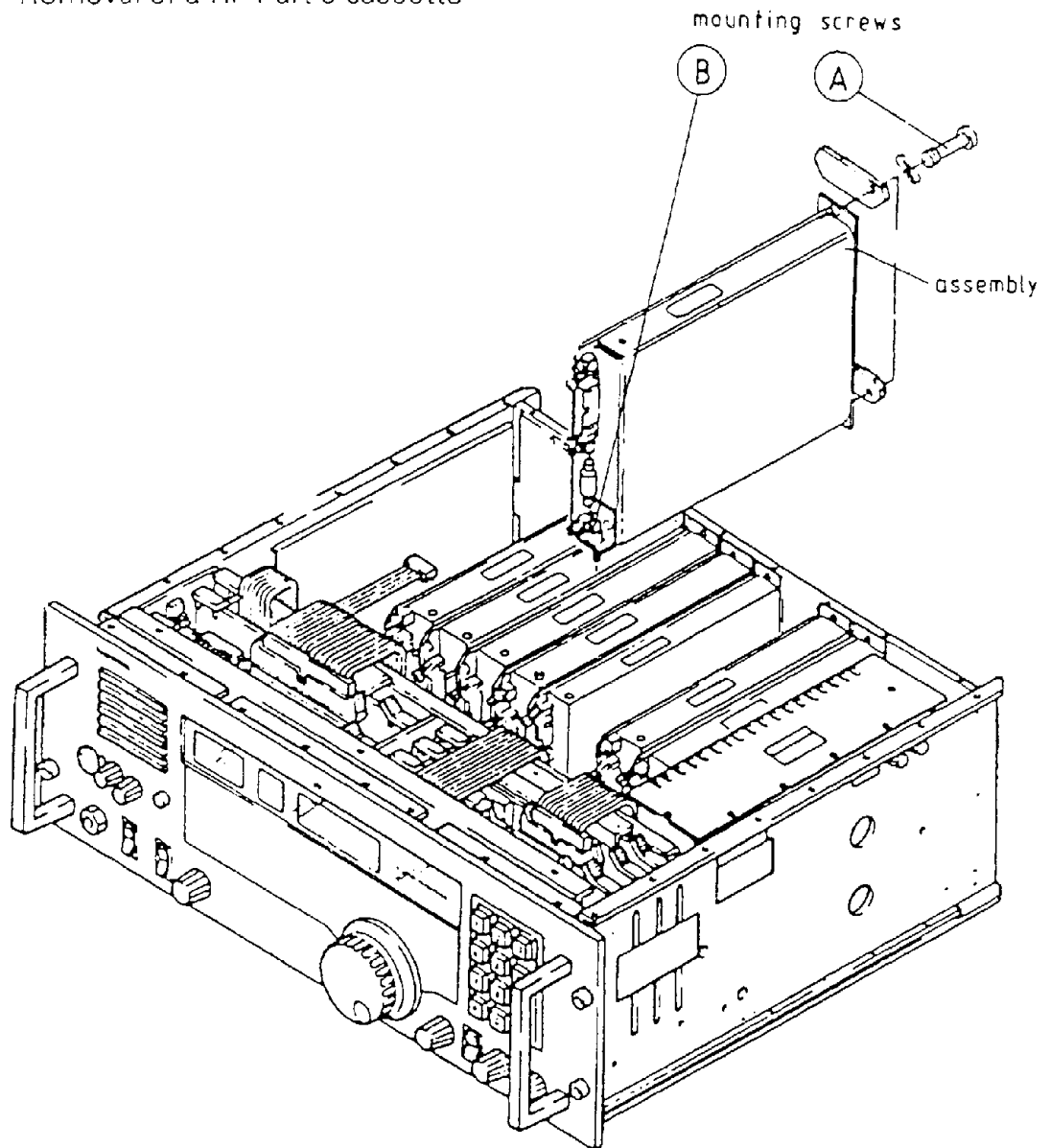


Fig. 3-11 Removal of a Cassette

The RF-Part of RX 1001 M / RX 5001 series is modular constructed. Remove cassettes as follows:

1. disconnect mains and battery plug and remove to top cover.
2. disconnect all cable connections of this cassette see fig. 3-6 to 3-8.
Unscrew the mounting screws (3 pieces for each cassette).
3. Remove cassette upwards from the RF-Part.
4. Insertion of a cassette is done the opposite way
 - insert the cassette, screw up mounting screws, align the cassette.
First set up screws (A), then screw (B).
 - replace all cable connections. Use special tool for coax connectors if available.

3.2.2.2 Removal and insertion of the power supply unit

Before the power supply unit is removed, remove the subassembly BFO first.

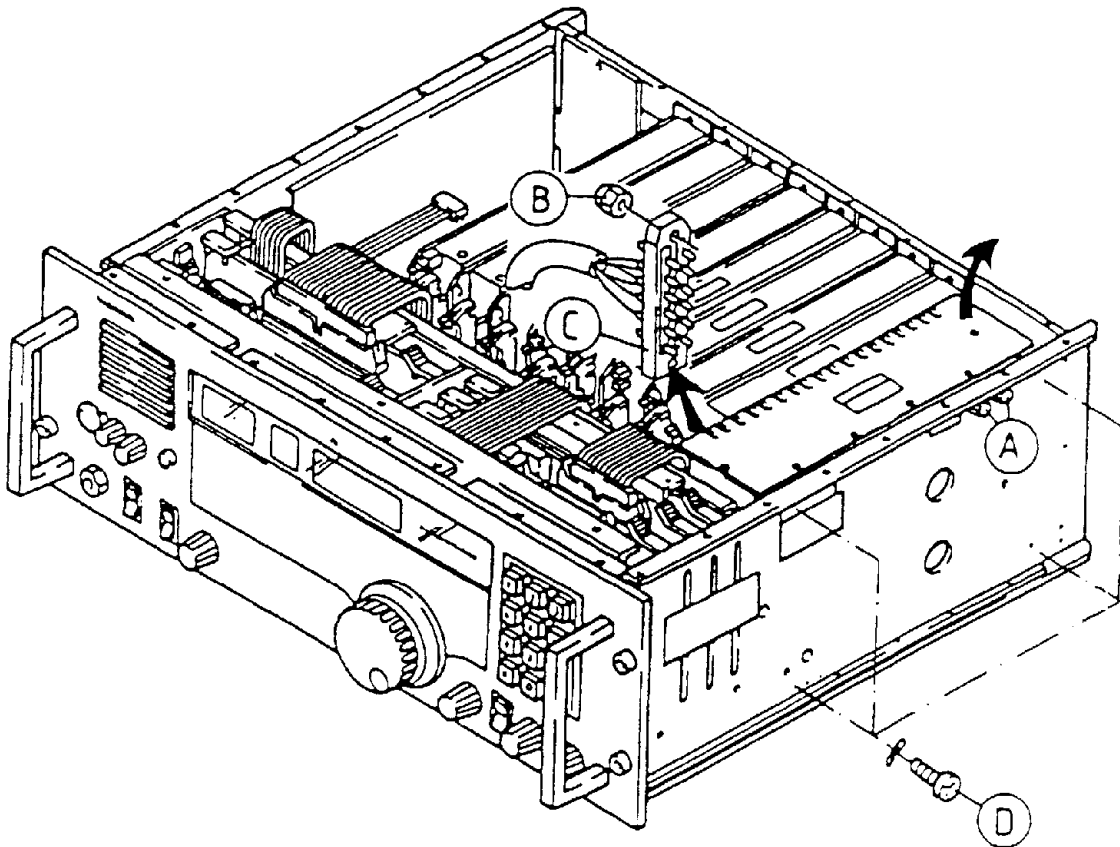


Fig. 3-12 Disconnecting the Power Supply Connector

- Remove mains and battery plug at the power supply unit
- Unscrew the fuse caps (A)
- Unscrew unit (B) and remove plug (C)
- Unscrew fastening screws (D) (4 pieces)

NOTE

If telescopic rails are attached to the RX, unscrew the rail on the powersupply side of the receiver and unscrew the second countersunk screw from the back. This screw is normally hidden by the rail.

- Now remove the power supply unit.

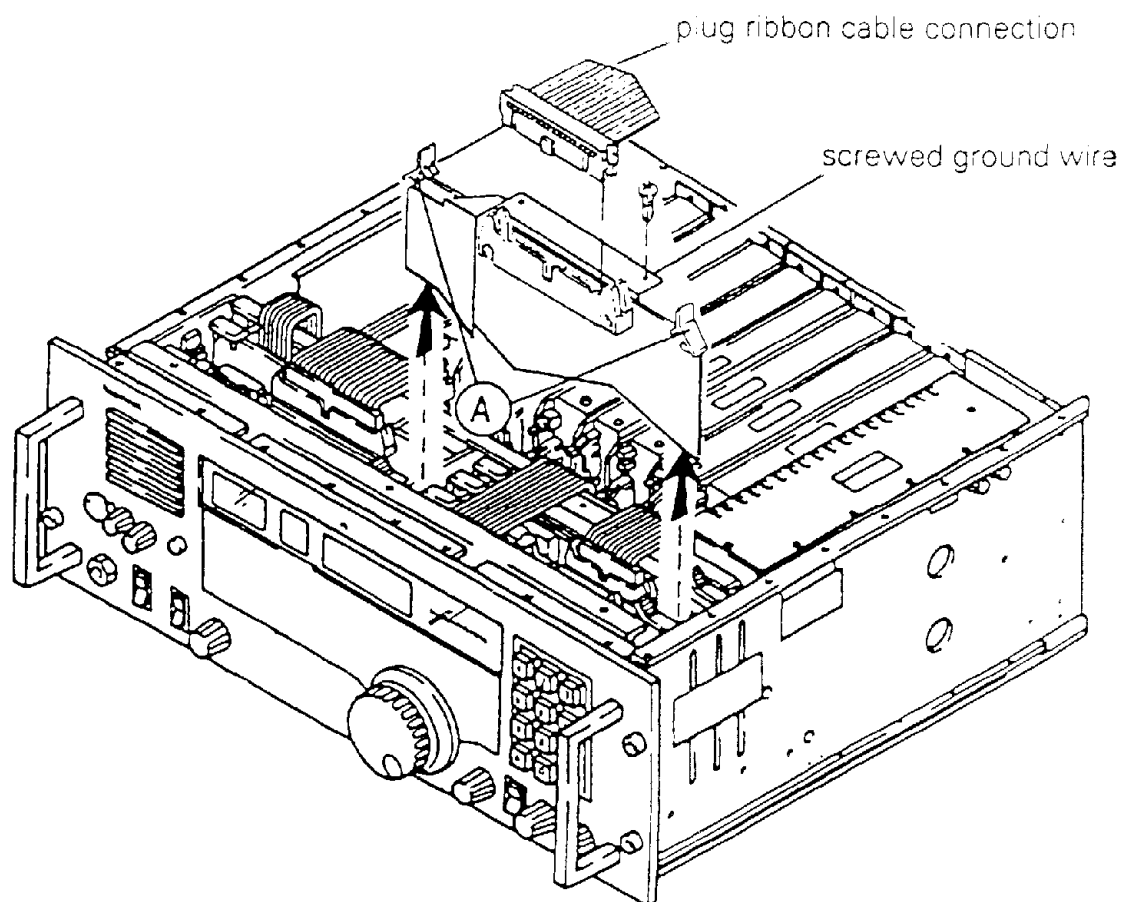


Fig. 3-13 Printed Circuit Board (PCB) Removal in the Control Part

NOTE

During fault finding and servicing it should be noted that on the PCB-TIME CLOCK HELP (Drawing No. 97 C 2.155.33) the accumulator supplies the clock components and the RAMs. If this PCB is removed, the content of the RAMs placed on the PCB-CPU II- are erased; channel inputs, frequencies, SCAN-times, etc. have to be keyed-in again, when the maintenance has been finished. During maintenance the accumulator can supply the RAMs for a maximum of 12 days, but only if the mains connector on the Power Supply Unit is not disconnected.

3.2.2.3 Removal of plug-in modules of the Control Part

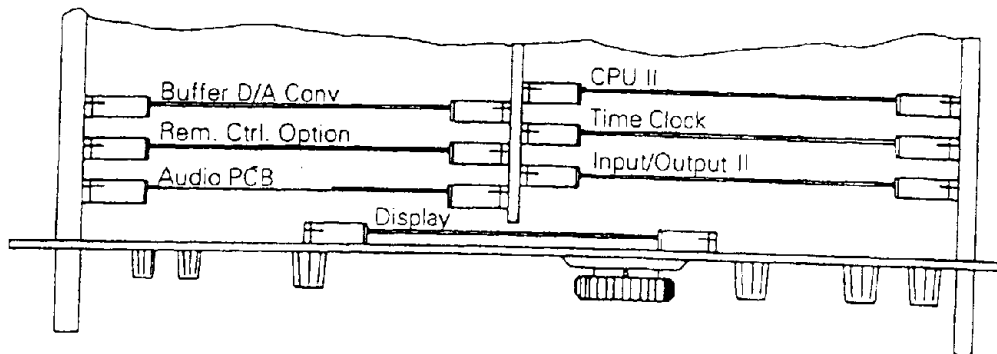


Fig. 3-14 Arrangement of the Individual Components of the Control Part

NOTE

The PCB-TUNING BOARD - is mounted behind the keyboard assembly.

CAUTION

The component groups contain **MOS** components!

All Printed Circuit Boards are plug-in connected to the PCB - MOTHERBOARD -. Additional cable and ground connections are made on the top of the PCBs. These connections have to be removed first.

- Using the two lifting levers (A) release the assembly from the plug-in connection.
- Lift out the assembly.

3.2.3 Dismantling of individual components

3.2.3.1 Dismantling a RF-Cassette

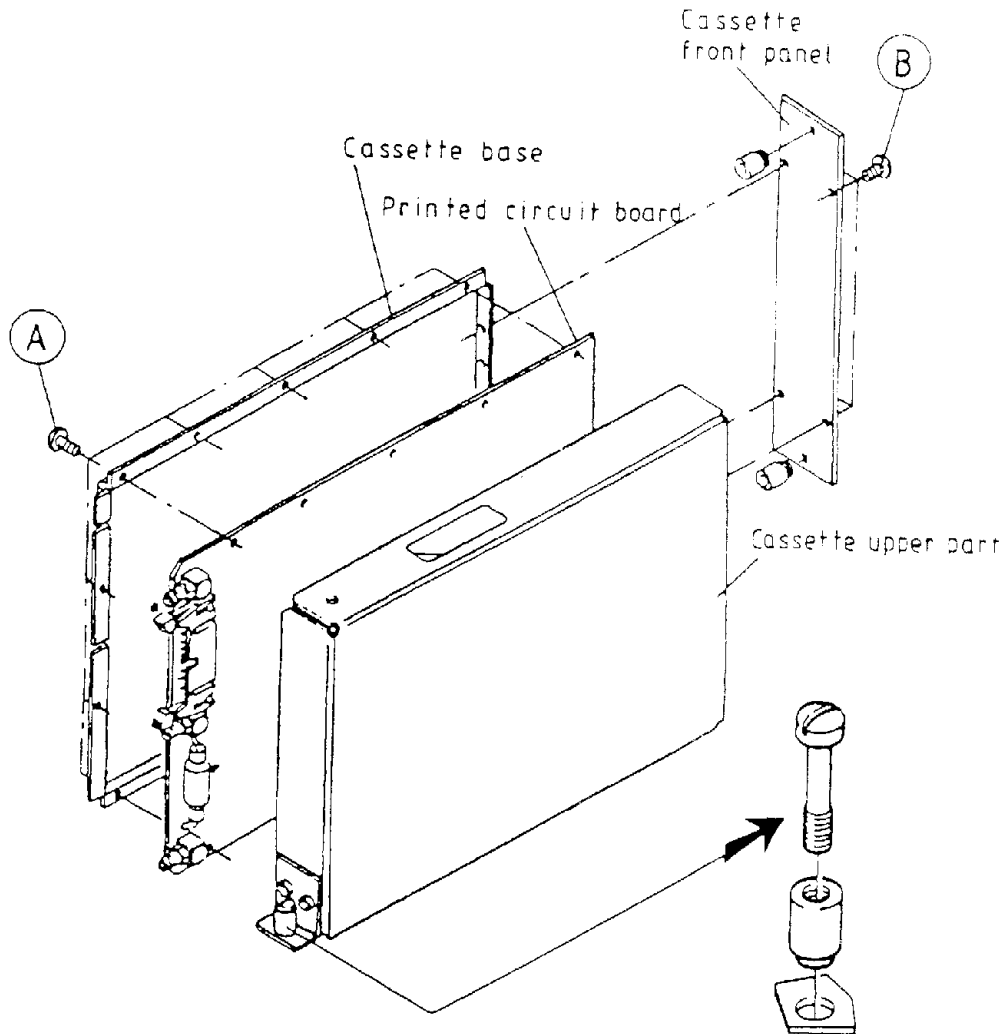
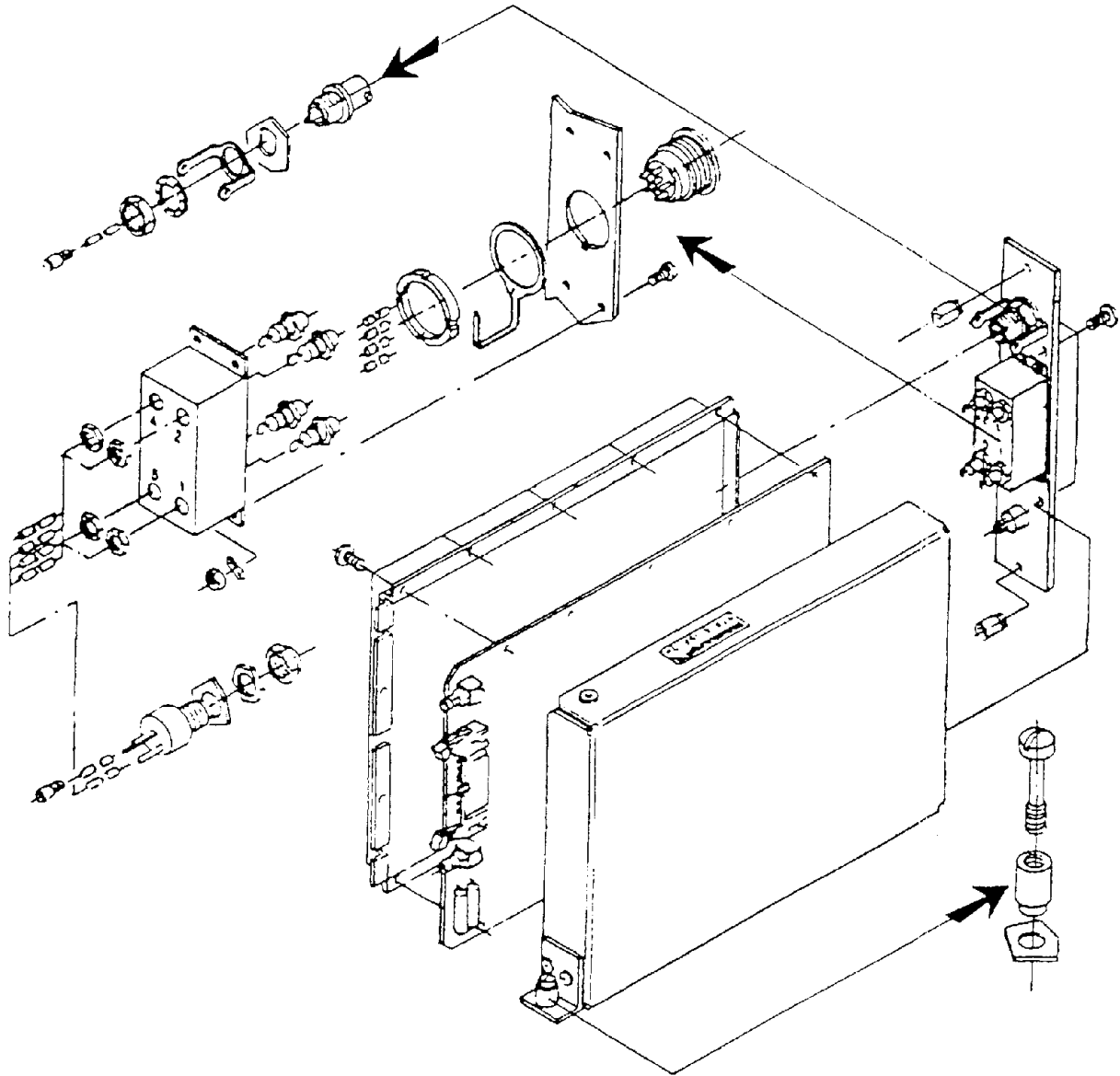


Fig. 3-15 Dismantling a RF-Cassette

- place the cassette on a table, screws should be at the top.
- unscrew mounting screws (A) and (B)
- now the cassette bottom part can be removed

CAUTION

The cassettes BFO, VCO-A, VCO-B, IF-OUT, DEMODULATOR, ISB Dem., FILTERBANK, PRESELECTOR and PROTECTOR have components on the front panel of the cassettes (LEDs, sockets, controls etc.) which are connected by short leads to the printed board. In the dismantled state care should be taken not to damage these leads, see fig. 3-16.



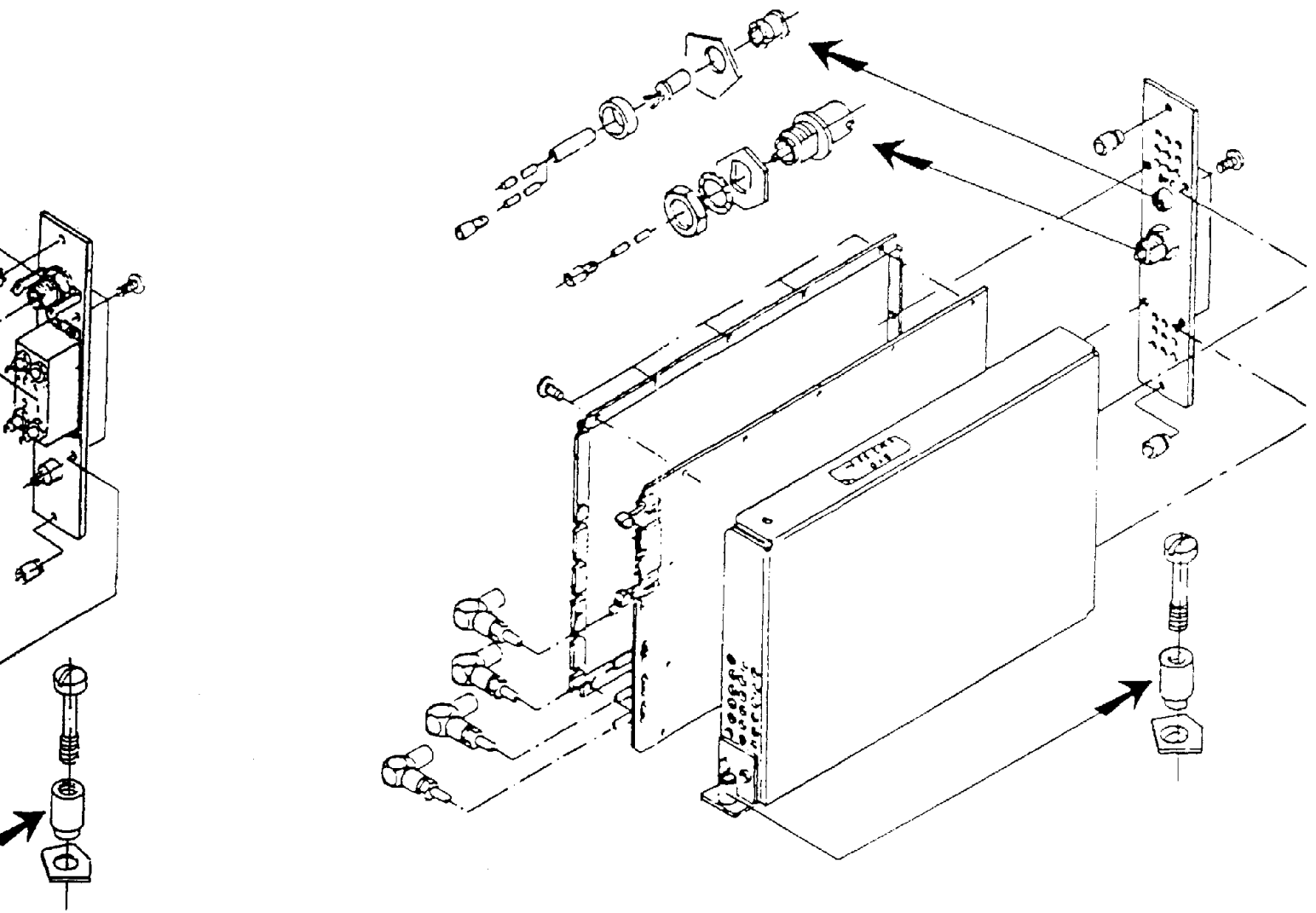


Fig 3-16
Example of a Dismantled
Cassette

3.2.3.2 Dismantling of the Power Supply Unit

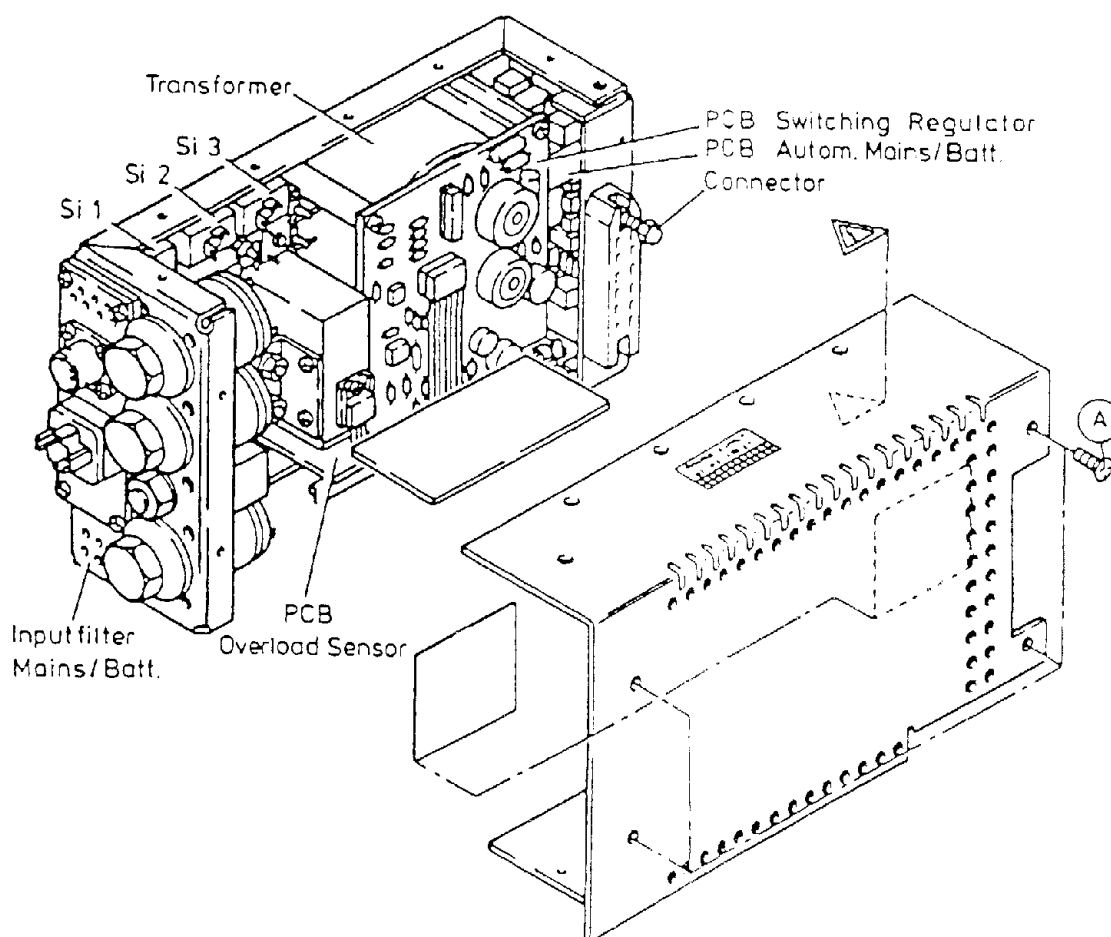


Fig. 3-17 Power Supply Unit -Opened

Unscrew all mounting screws and remove the cover. The Power Supply Unit consists of the following main parts

- mains transformer
- input filter Mains/Batt.
- PCB Overload Sensor
- PCB Switching Regulator
- PCB Auto Mains/Batt.

3.2.3.2.1 Removal of the Input filter Mains/Batt.

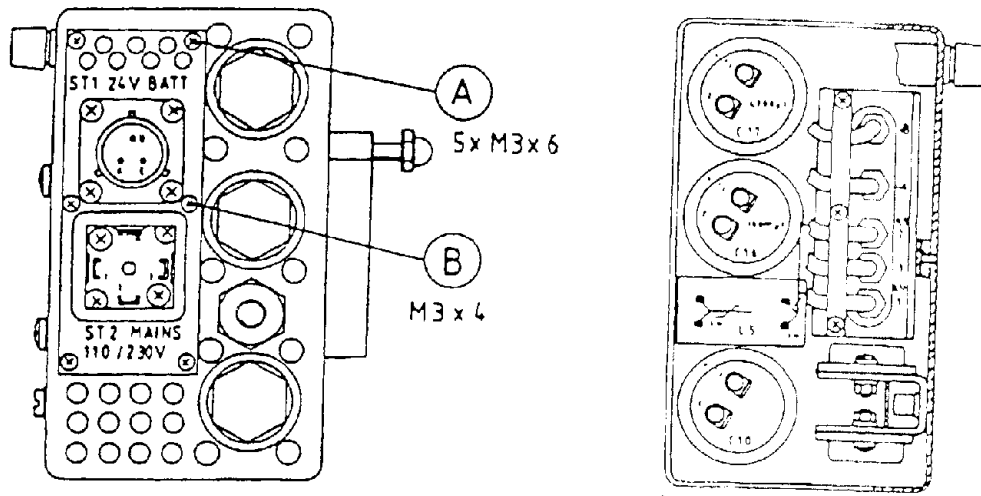


Fig. 3-18 Input Filter Inside the Power Supply Unit

- unsolder connection cable on the rear side of the Input filter (+ B and - A for 24 V DC Batt. and 1 and 2 for mains AC) -see circuit diagram drawing No. 97 Sa B 2.155.21

CAUTION

During the assembly do not mix the different types of screws.

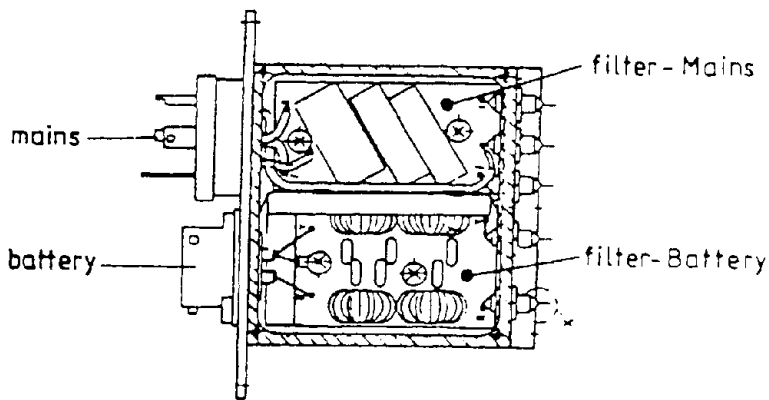
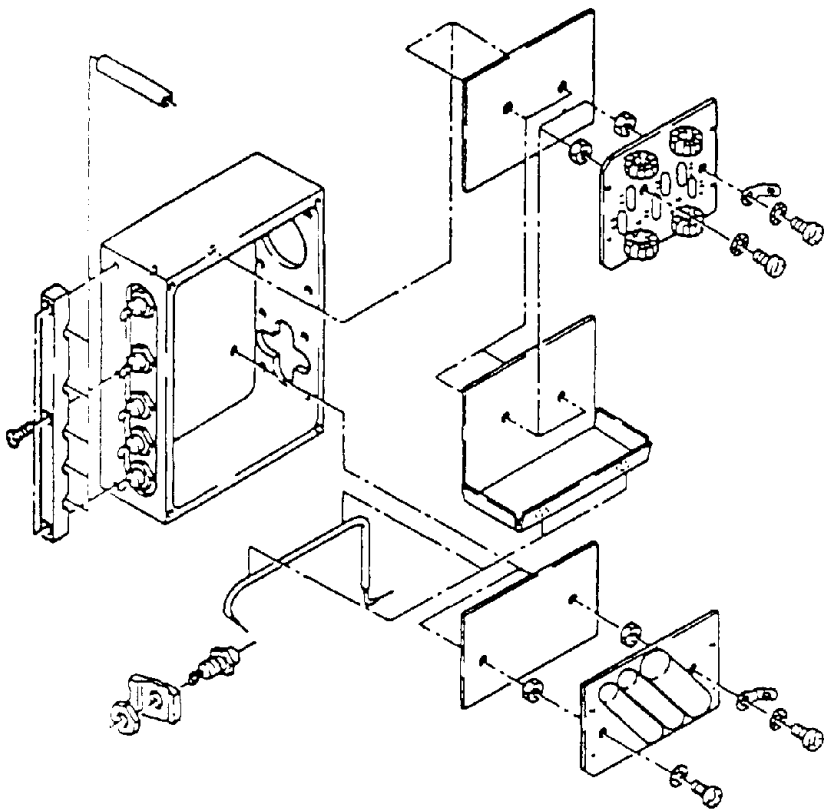
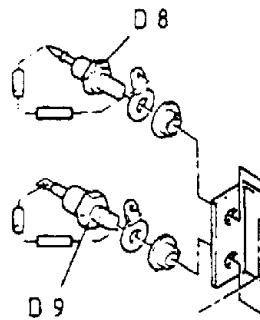
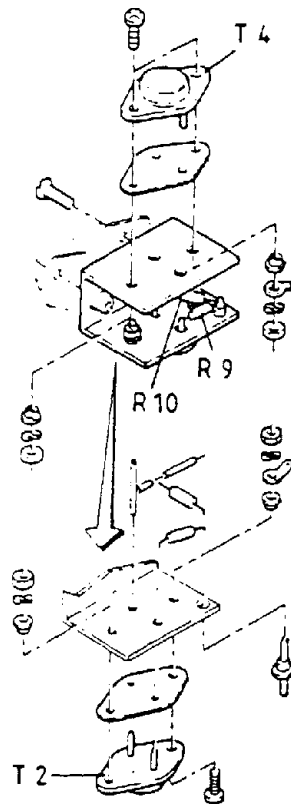
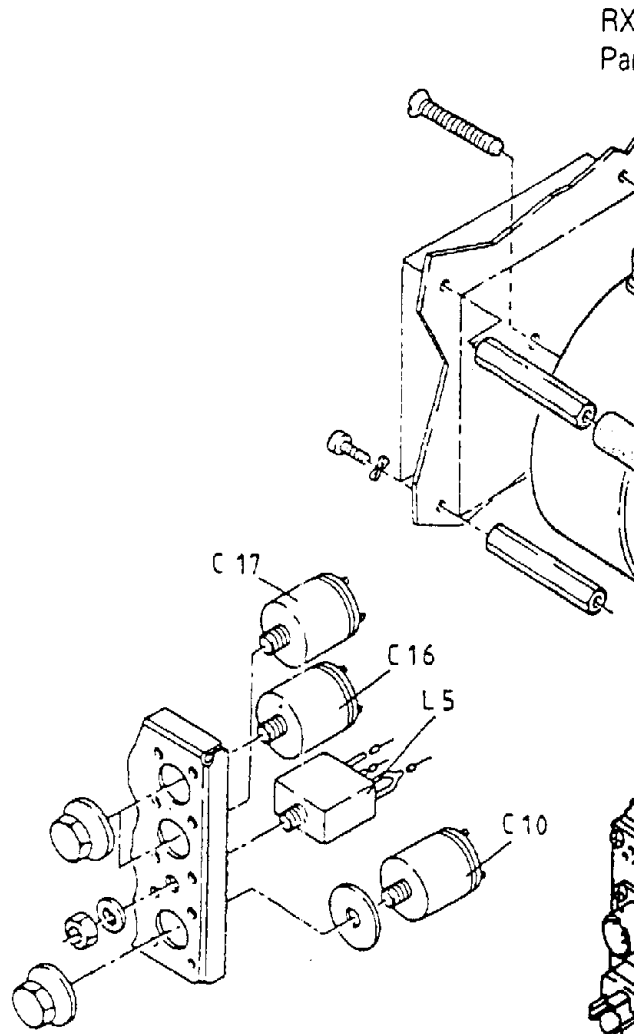


Fig. 3-19 Input Filter -Removed

Fig. 3-20 shows further components of the Power Supply Unit. This figure shows components which are not mounted on printed circuit boards.



— Inputfilter 180° rotated —



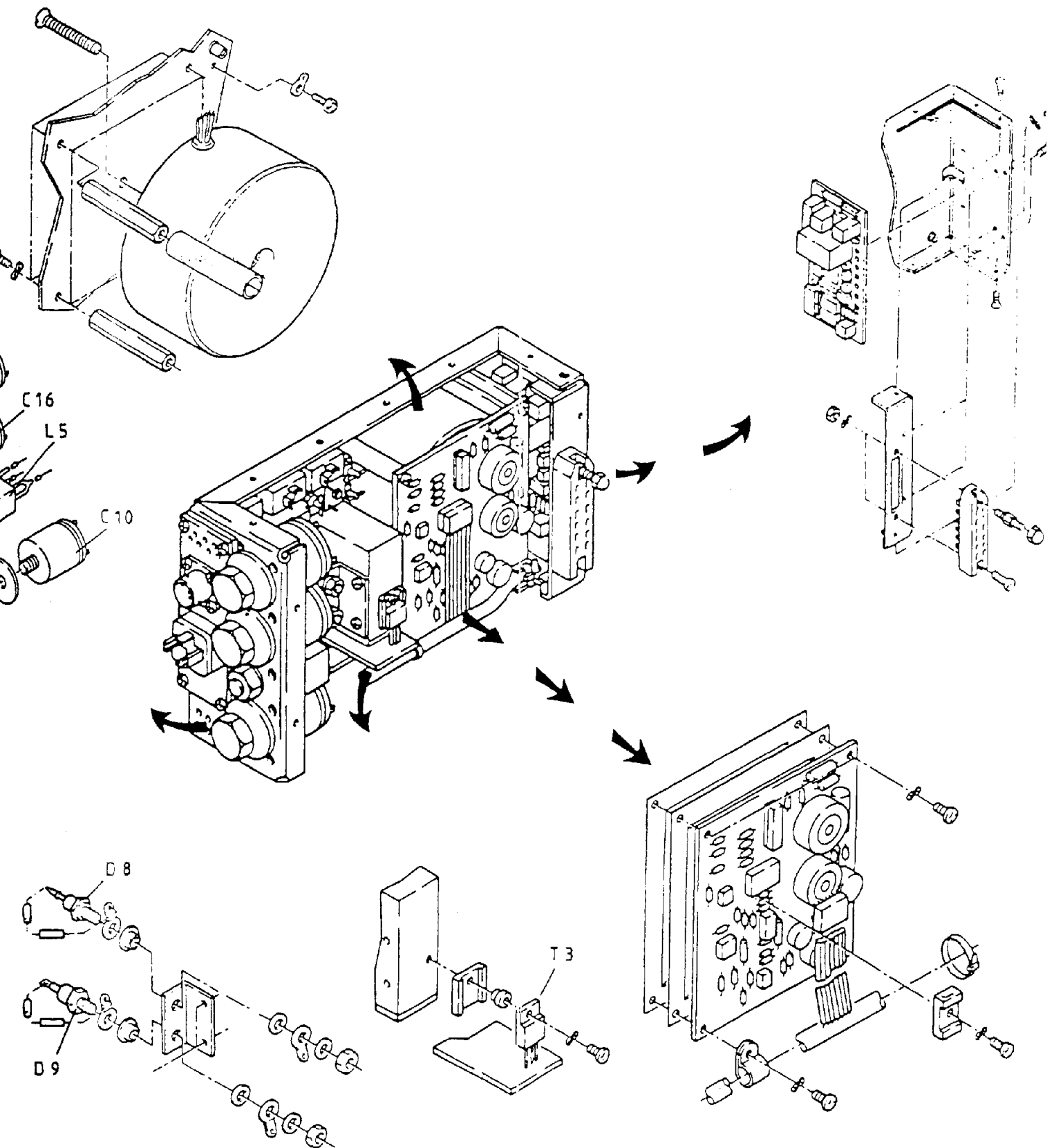


Fig. 3-20
Power Supply Unit and
Individual Components

3.2.3.3 Control Part of RX 1001 M / RX 5001

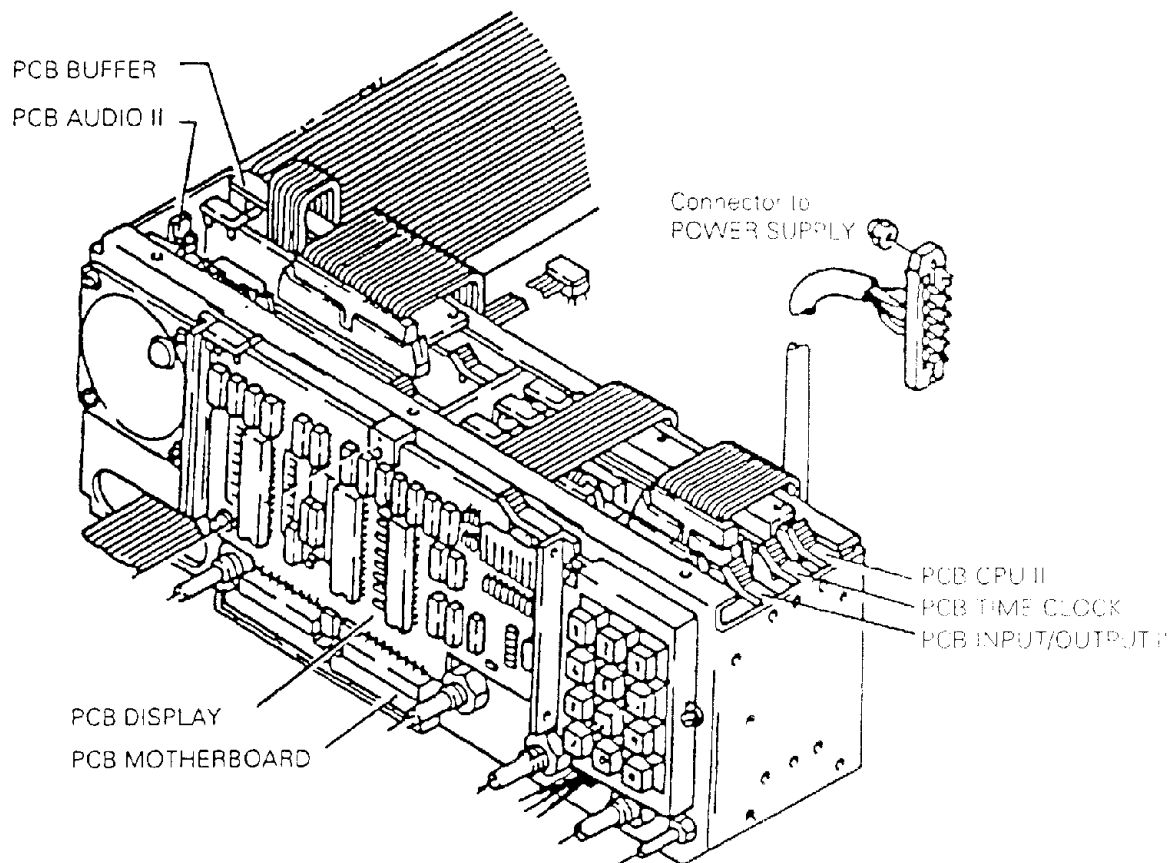
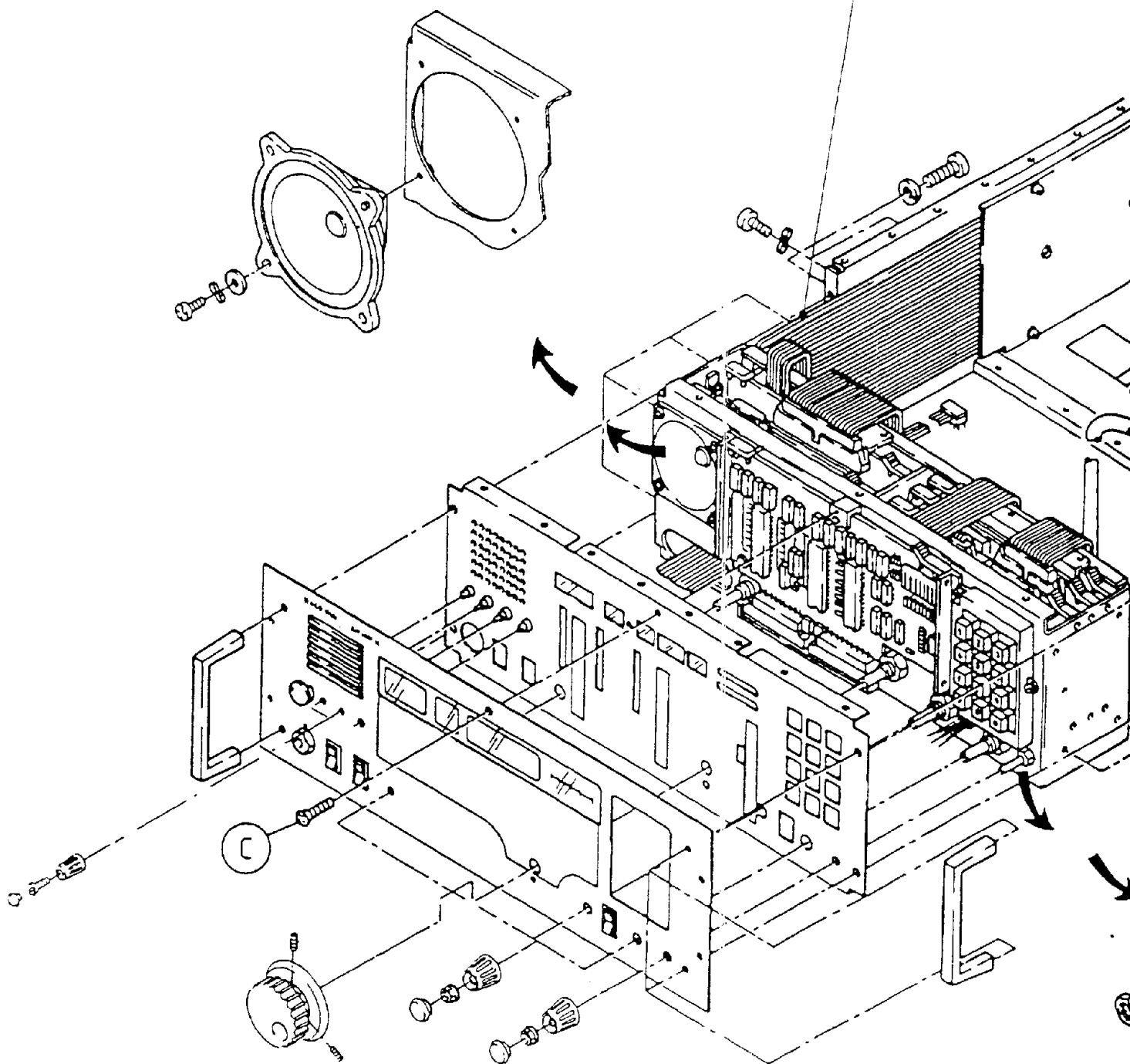


Fig. 3-21 Control Part of RX 1001 without Front Panel

3.2.3.3.1 Removal of the Control Part

- remove the knobs for AF, RF, BFO and DIMMER, see fig. 3-22.
- remove the knobs for CONTROL, ISB-SPEAKER or keyboard ON/OFF and the tuning knob.
- unscrew and remove screw (C) in the middle of the front panel.
- the front panel, the handles and the frame are bolted together by screws (B), 4 pieces.
- now the front panel can be turned down carefully. On the rear side of the panel locate the cables to the headphones socket, the switch mains ON/OFF and the switch STEPS 10/100 Hz. These cables now have to be unsoldered.
- turn down the screening
- unscrew mounting screws (D) of the cover plate and the screws (E) of the shroud for the rear plugs.
- place the shroud with the 3 M ribbon cable inside the cabinet.
- remove 3 M ribbon cable of the BUFFER D/A Converter and remove the cable connection of the Power Supply Unit.
- unscrew the mounting screws (B) 6 pieces of the frame. Now remove the complete Control Part

3 M ribbon cable to ext. c



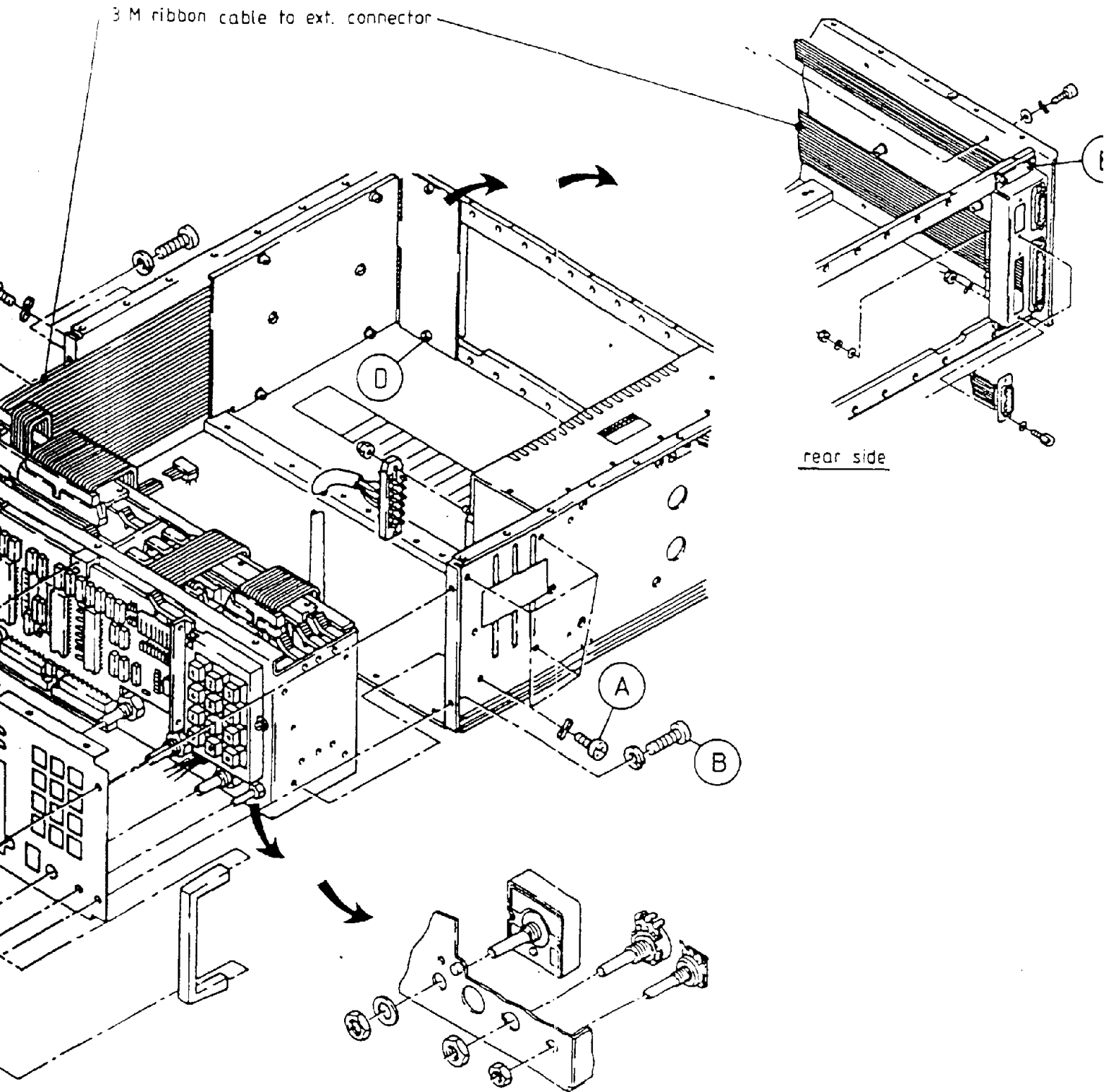


Fig. 3-22
Control Part

3.2.3.3.2 Removal of a potentiometer

- the front panel has to be removed first.
- now remove the relevant printed circuit boards behind the potentiometer, see fig. 3-13.
- unsolder the cables of the potentiometer, see fig. 3-23.

3.2.3.3.3 Removal of the keyboard

- the front panel has to be removed first.
- disconnect the ribbon cable of the PCB INPUT/OUTPUT.
- remove the printed circuit boards behind the keyboard.
- unscrew mounting screws (A), see fig. 3-23, remove keyboard with the TUNING PCB.
- unscrew mounting screws (B) and take off the printed circuit board

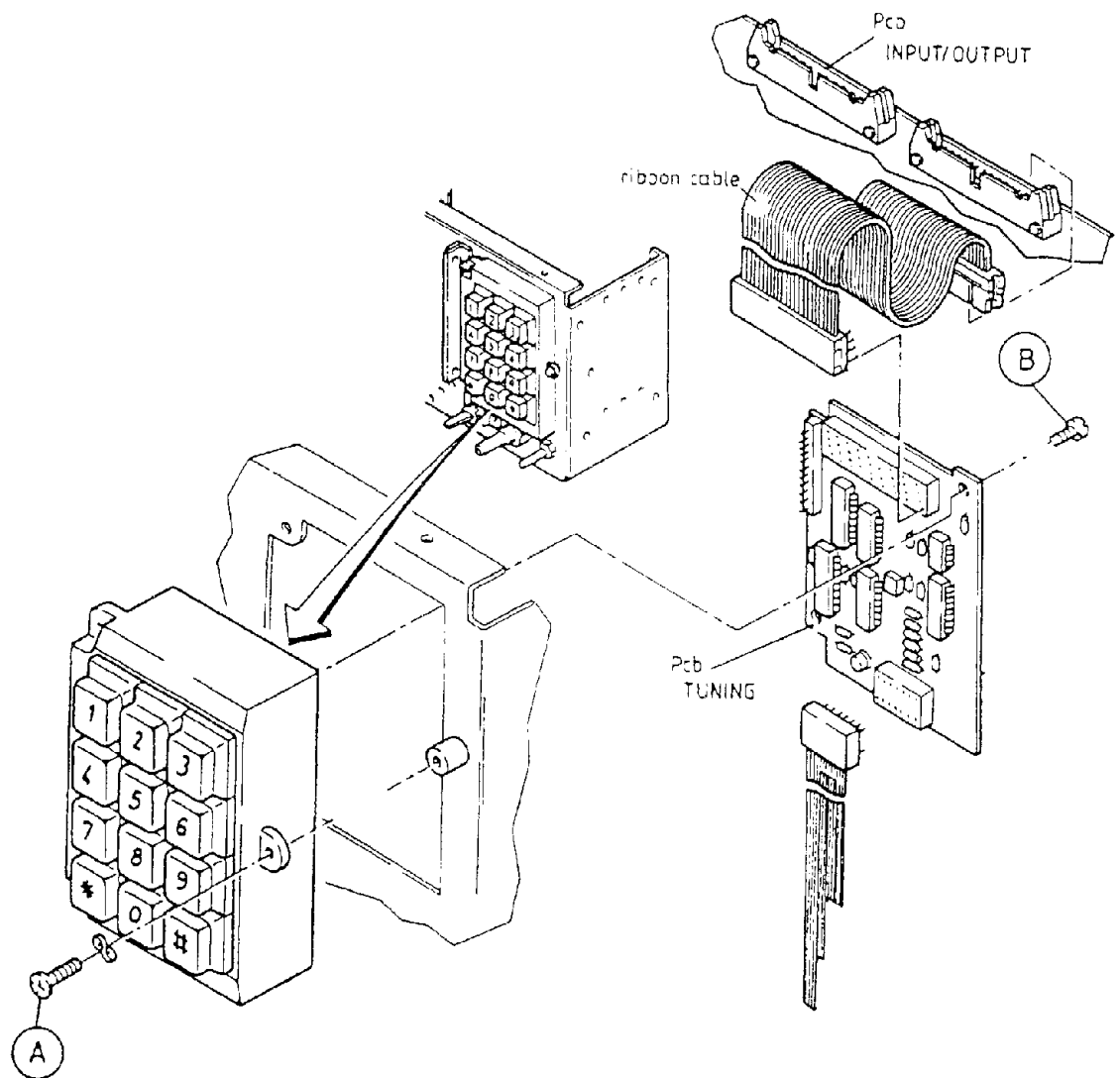


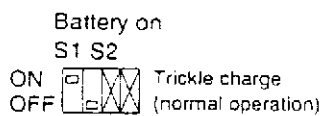
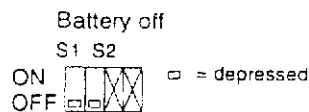
Fig. 3-23 Replacement of the Keyboard

3.3 Putting into operation**3.3.1** Switching on stand alone Receiver

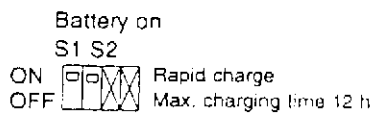
Check following settings:

- Switch CONTROL on position LOC.
- Supply voltage check (see Section 3.2.1.5)

Setting into operation the first time, e.g. after maintenance (with disassembly and transportation). The built in accumulator should be switched off during delivery. When the receiver is set to operation, the accumulator charging has to be switched on.



In this position the battery will be fully charged after 4 days.



The DIL-switch can be switched by means of a screwdriver through the receiver top cover.

NOTE

A fully charged battery can maintain time and RAM content for 12 days. Never use Quick charge setting with a mains plug which has a missing link (pin 3 and GND)

3.3.2 Switching on Remote Controlled Receiver as above, but Control Switch must now be in position REM.

3.3.3 Internal settings for RX 1001 M / RX 5001 remote or local controlled receiver

To change these settings, the top lid of the Receiver RX 1001 M / RX 5001 has to be removed ref to Fig. 3-4, and the respective PCB has to be extracted.

CPU PCB

switch S1: baud rate selector for Serial Interface

Baud	S 1.1	S 1.2	S 1.3	S 1.4
50	ON	ON	OFF	ON
75	ON	ON	OFF	OFF
110	OFF	OFF	OFF	OFF
134,5	ON	OFF	ON	ON
150	OFF	OFF	OFF	ON
200	ON	OFF	ON	OFF
300	OFF	OFF	ON	OFF
600	ON	OFF	OFF	ON
1200	OFF	ON	OFF	OFF
1800	OFF	ON	OFF	ON
2400	ON	OFF	OFF	OFF
2400	OFF	OFF	ON	ON
4800	OFF	ON	ON	OFF
9600	OFF	ON	ON	ON

INPUT/OUTPUT II PCB

Switch S1

Frequency offset for Telexmode (F1B or Telex/FAX))

The receiver receives a frequency, which is actually the displayed frequency minus the selected offset (Mode USB)

Position	offset in kHz
1	1.1
2	1.2
3	1.3
4	1.4
5	1.5
6	1.6
7	1.7
8	1.8
9	1.9
0	2.0

Switch S 2.1 to S 2.3 Remote control mode (function of the Serial Interface)

S 2/1	ON:	Remote PCB built-in
	OFF:	Remote PCB not built-in
S 2/2	ON:	GO/NOGO mode with DSR and DTR signals
	OFF:	Remote controlled operation according to position of S 2.3
S 2/3	ON:	Computer control (ASCII)
	OFF:	Data transmission with LSV 2 protocol

Permitted switch positions of S 2.1 to S 2.3 Position of S 2.4 is independent.

Remote controlled modes	S 2.1	S 2.2	S 2.3
Remote PCB not built-in	OFF	X	X
Remote control with LSV2 protocol	ON	OFF	OFF
Computer control (ASCII)	ON	OFF	ON
GO/NOGO mode with DSR and DTR signals	ON	ON	OFF

Switch S 2.4 HELP 15 generation (refer to Auto Bite sequence step 35, 36)

ON:	generation of HELP 15 during BITE possible
OFF:	no generation possible

Remote RS232 PCB

- Switch S 1: Serial Interface
- RS-232-C(V24: with modem and the signals DSR, DTR, RTS and CTS
 - TXD/RXD only: without modem, only signals TXD and RXD
- Switch S 2: Transmission speed (with modem) resp. number of data bits (with computer control)
- 600 Bd: low transmission speed or 7 data bits
 - 1200 Bd: high transmission speed or 8 data bits

REMARK

for GO/NOGO operation S 2 must be switched in position 600 Bd.

Switch S 3: Receiver address for serial interface (RX No)

Switch S 4... S 7 set to position RX.
only on RS232 Mod. PCB

Part 3

Audio PCB II

S 1/1	ON:	Mode CHANNEL SCAN possible (codes 41, 45, 46, 49)
	OFF:	Mode SCAN CH + CH (41)
S 1/2	ON:	MGC via remote control in 6.5 dB steps additionally resistor R6 on Time Clock Help PCB in receiver and remote control have to be changed to 3.3 kOhm
	OFF:	MGC via remote control in 10 dB steps resistor R6 on Time Clock Help PCB in receiver and remote control has to be 1 kOhm (Normally fitted)
S 1/3	ON:	Mode ISB; If ISB-Demodulator module is fitted
	OFF:	Mode ISB is blocked module IF/OUT is fitted (Both options S 1.3 only possible if S 2.1 is in "OFF" position)
S 1/4	ON:	Mode FREQUENCY-SWEEP is possible (codes 42, 43, 44, 49)
	OFF:	Mode FREQUENCY-SWEEP is blocked
S 2/1	ON:	None of the options IF out or ISB have been fitted
	OFF:	Option ISB or IF out have been fitted
S 2/2		Not used
S 2/3		Not used
S 2/4		Not used

Time Clock PCB

Switch	S 1:	Accumulator
S 1/1	ON:	Accu switched on (trickle charged if Mains connected)
	OFF:	Accu switched off
S 1/2	ON:	Accu quick charge (max. 12 hours) (S 1/1 must be ON as well)
	OFF:	No quick charge
S 1/3		Not used
S 1/4	ON:	U-AGC and UMGC mixed
	OFF:	U-AGC and U-MGC separated (Normal Mode) (Only possible with modified PCB)

Interconnection Board

Switch	S 1:	GO/NOGO input
	ON:	GO/NOGO operation S 2 on Remote PCB in position 600 Bd (pull down for DSR)
	OFF:	Other remote controlled operations

3.4 Installation

Receivers of series RX 1001 M / RX 5001 are 19" Slide-in Units. For this reason they can be installed directly in 19" racks.
Type KG 4/500 can be used as single unit (see Illustration 24).

3.4.1 Establishing the Mains and Battery Connections

Plugs required for this are in the Pack-connector 97 D 2. 173. 13-.
Illustration 25 shows how to make the mains cable.
Illustration 26 shows how to make the battery cable.
Illustration 27 shows how to make the ground connection cable
(no material will be supplied for this).

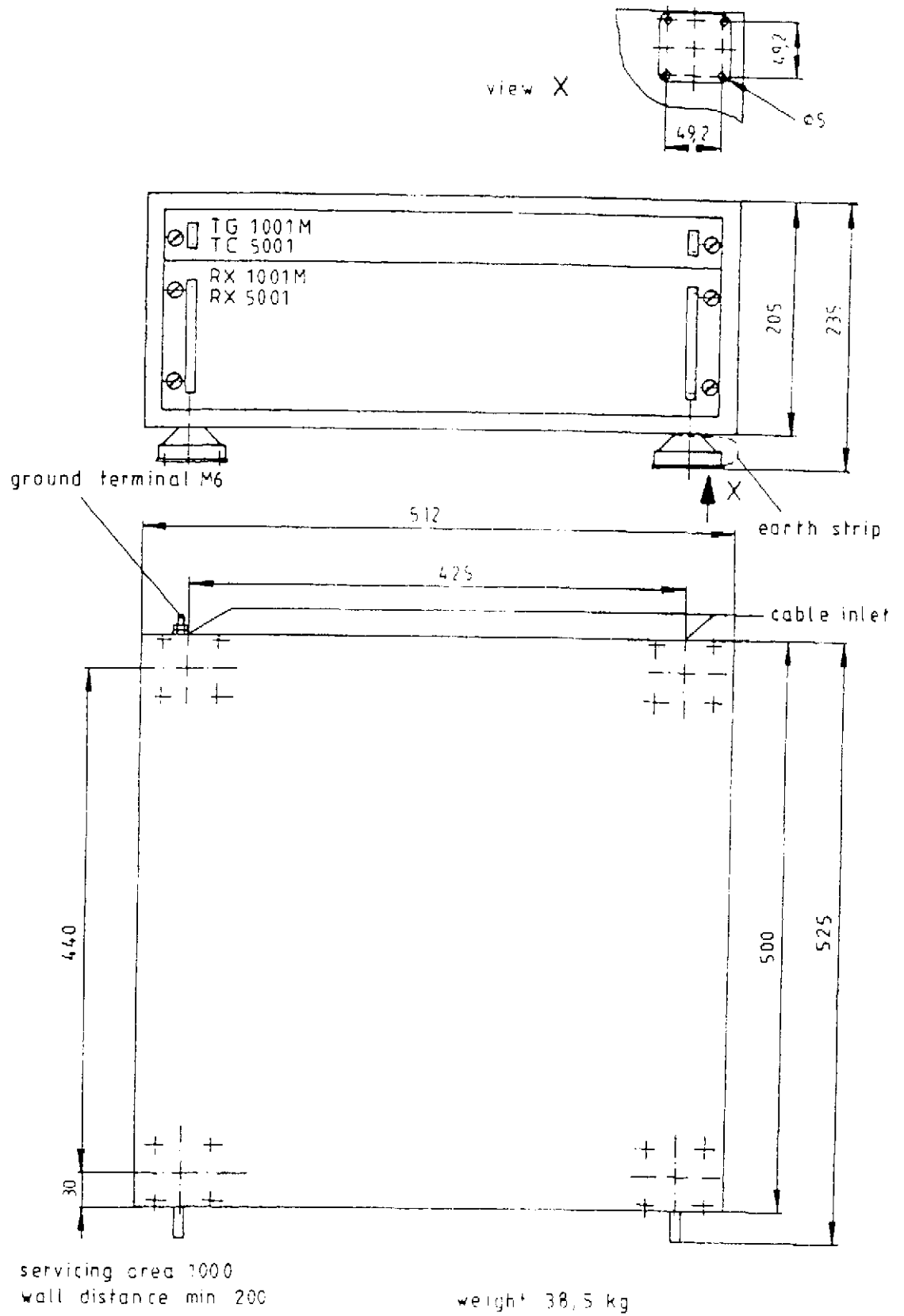


Fig. 3-24 Single Housing of Type 4/500

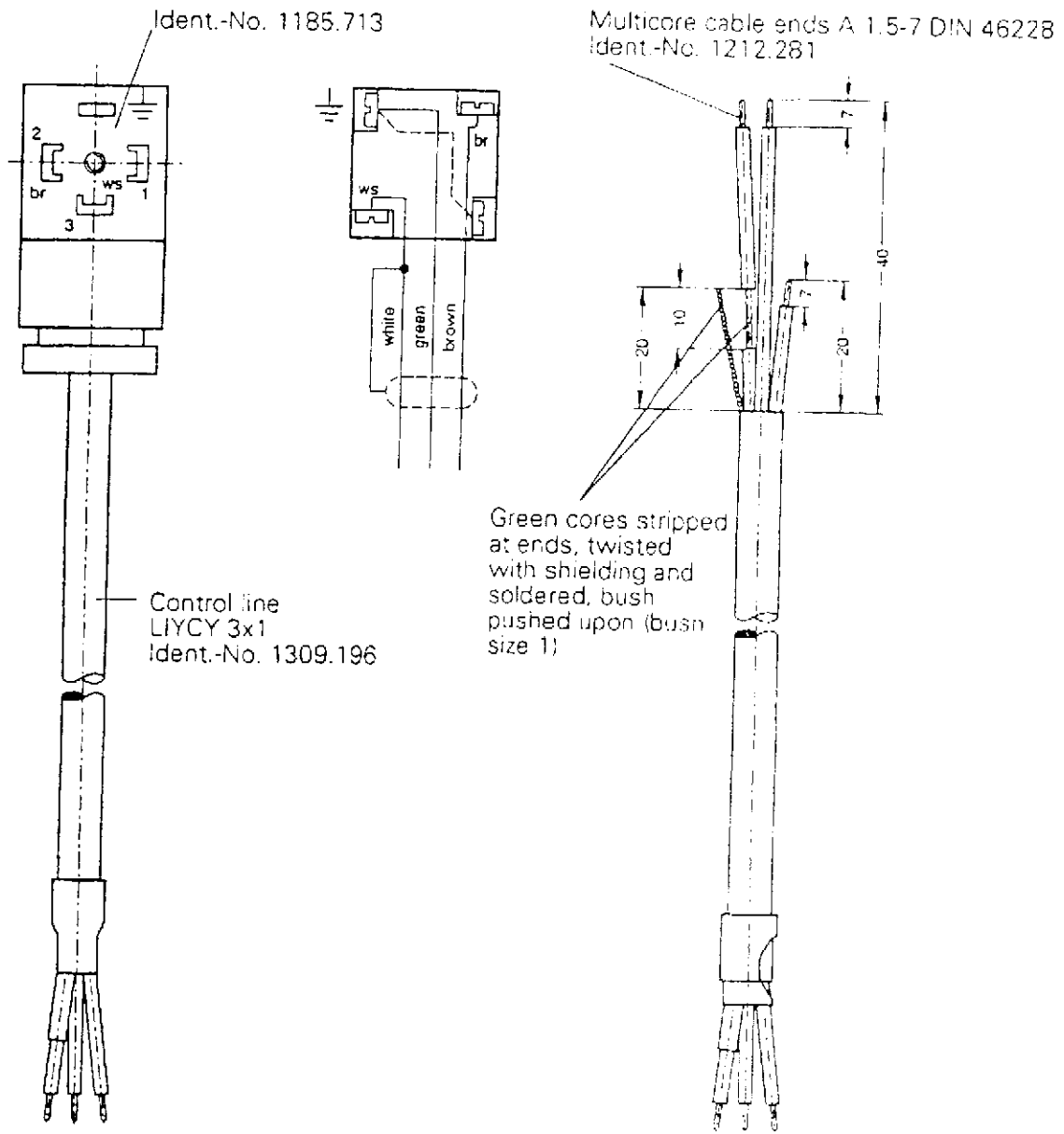


Fig. 3-25 Mains Cable

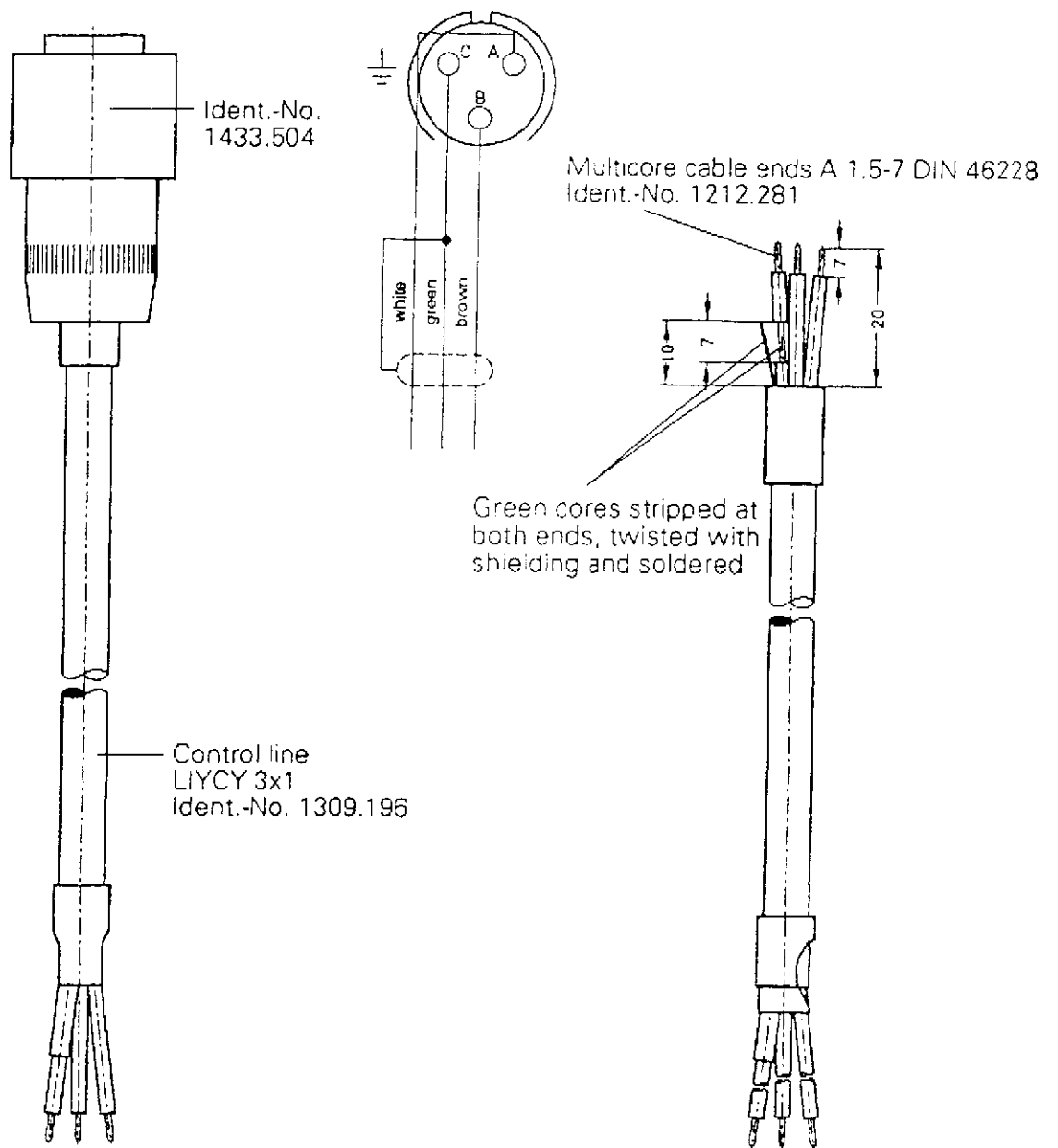


Fig. 3-26 Battery Cable

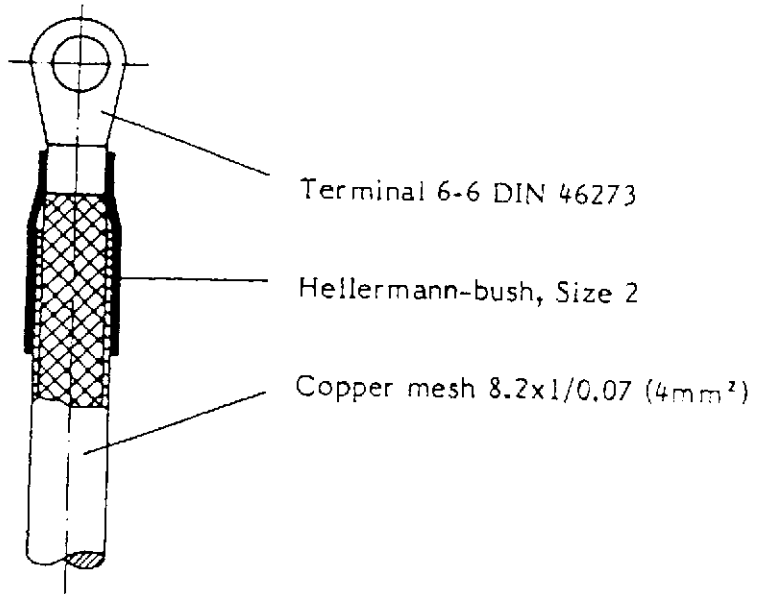
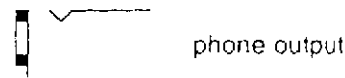


Fig. 3-27 Ground Connection Cable

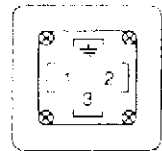
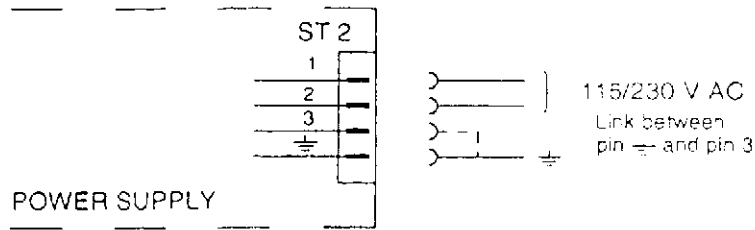
Frontpanel receptacle:



Mating plug: PL - Plug 8 mm mono

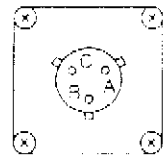
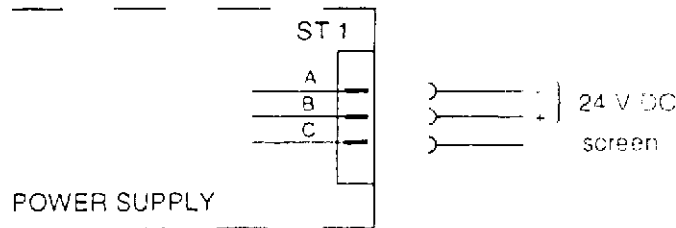
Backpanel receptacles:

MAINS CONNECTOR



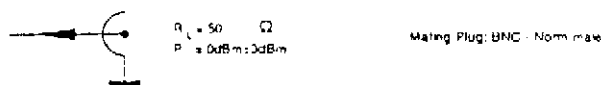
Mating plug: Cable socket FC 164-839 F-4-S132(Amphentol)

BATT. CONNECTOR



Mating plug: Plug 851 06 J 12-3 550 (Souriau)
PT 06 W 12-3 S (female)

1/10 MHZ EXTERN FREQU. STANDARD - IN



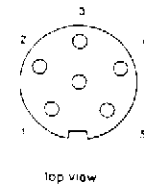
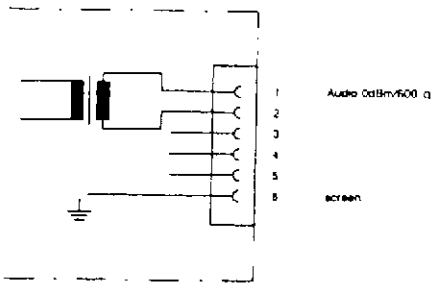
10 MHz Selectable only in BFO II Module

1/10 MHZ EXTERN FREQU. STANDARD - OUT



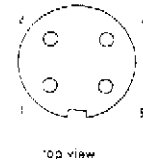
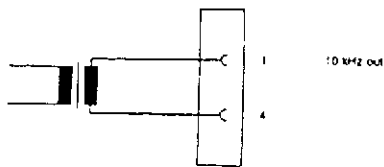
only fitted in BFO II Module

ISB - DEMODULATOR - OUT (option)



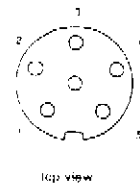
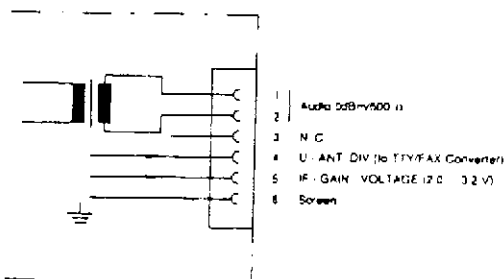
Mating Plug: Plug 6 pole male BNR.T3400/I (Amphenol)

IF - OUT(option RX 5001 standard RX 1001 M)



Mating plug: Plug 4 pole male BNR.T3400/I (Amphenol)

DEMODULATOR - OUT



Mating plug: Plug 6 pole male BNR.T3400/I (Amphenol)

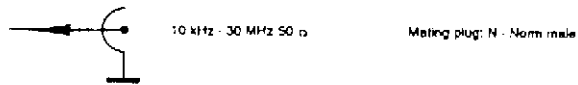
DEMODULATOR



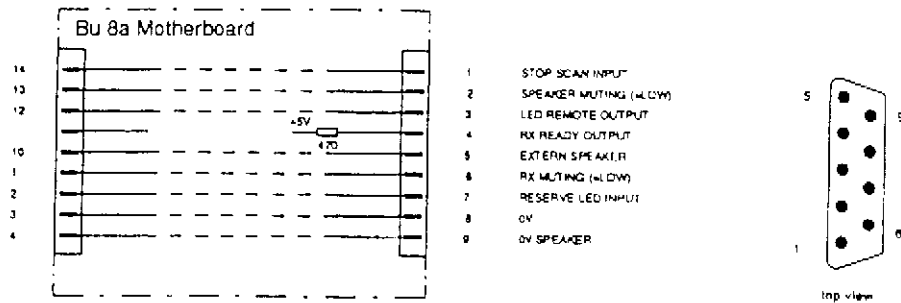
FILTER



PRESELECTOR/PROTECTOR (ANTENNA INPUT)

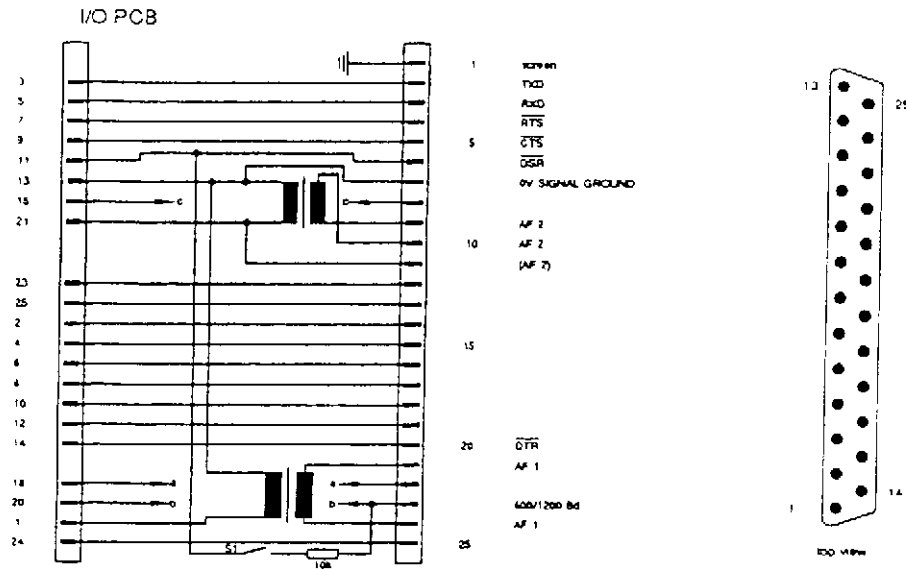


EXTERN Connector



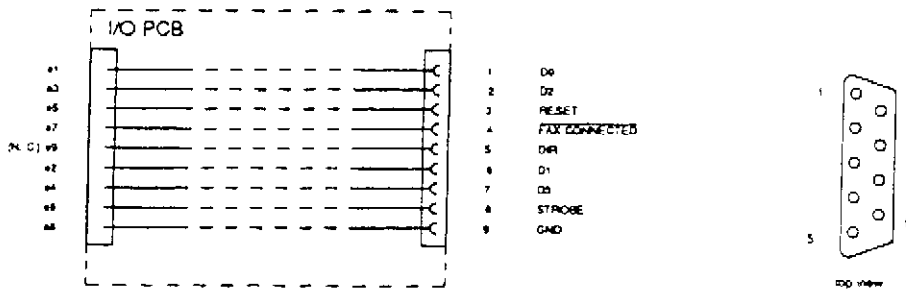
Mating plug: Sub D 9 pole female DE 9S (Cannon)
with cover FMHI and 2 fixing screws FRS IY5

REMOTE CONNECTOR (RS 232 -C) (option)



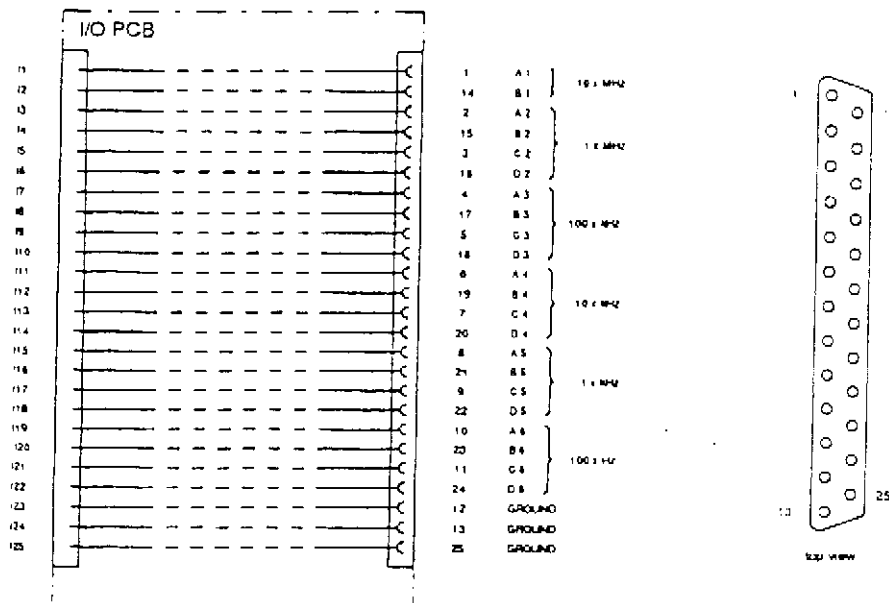
Mating plug: Sub D plug 25 pole female DE 25S(Cannon)
with cover FMH 3 and 2 fixing screws FRS IY5

TTY/FAX Data Connector



Mating plug: Sub D plug 9 pole male DE 9P(Cannon)
with cover FMH 1 and 2 fixing screws FRS IY5

BCD - OUT Connector



Mating plug: Sub D plug 25 pole male DE 25S(Cannon)
with cover FMH 3 and 2 fixing screws FRS IY5

3.5 Configurations

3.5.1 RX 1001 M Configuration

B (Basic version)

Protector 97 2.155.95

1. Mixer 97 2.155.83

2. Mixer 97 2.155.90

Filter 97 2.155.76

Demodulator 97 2.155.70

IF Out 97 2.155.100

VCO-A 97 2.155.55

VCO-B 97 2.155.63

BFO 97 2.155.50

or

BFO II 97 2.155.50 B

Power Supply 97 2.155.21B

Interconnection PCB 97 2.155.19

Motherboard 97 2.155.24

Buffer D/A Converter 97 2.155.30

Audio PCB 97 2.155.36

Containing

IC E A 1.5 97 E2.155.301

IC D erased, not programmed

or

Audio II PCB 97 2.155.37

Containing

IC E A 1.5 97 E2.155.261

CPU II PCB 97 2.155.35

Containing

IC N A 7.4 97 E2.155.261

IC O A 7.4 97 E2.155.262

IC R A 7.4 97 E2.155.263

Time Clock PCB 97 2.155.33

Input/Output II PCB 97 2.155.38

Tuning PCB 97 2.155.28

Display PCB 97 2.155.25

Hardware Options

VB (Basic version with preselector)

Preselector 97 2.140.150 B

FVB (Basic version with preselector and Remote control PCB)

Apart from the Standard TCXO various TCXO options are available:

High range	97 2.155.52-3 B
Digital (D-TCXO)	97 2.155.52-5
OVEN (OCXO)	97 2.155.52-6/7

When the BFO II Module is fitted, a 1/10 MHz Reference Frequency output is available. When an Audio II PCB is used, channel scan and Frequency sweep modes can be used by setting the appropriate selector switches on this PCB.

A modified Time clock PCB enables AGC/MGC mixed mode after setting the appropriate switch on this PCB.

NOTE

The following modules out of the RX 1001 M / RX 5001

Demodulator	97 2.155.70
1. Mixer	97 2.155.83
BFO	97 2.155.50
BFO II	97 2.155.50 B

may be replaced by the corresponding modules out of the RX 1001 M / L11 as there are

Demodulator/L11	97 2.183.70
1. Mixer/L11	97 2.183.83
BFO/L11	97 2.183.50

The L11-modules should not be replaced by the RX 1001 M / RX 5001 basic modules. For circuit diagrams, descriptions and drawings refer to the RX 1001 M/L11 Manual.

3-5.2 RX 5001 Configuration

Protector	97 2.155.95
or	
Preselector (optional)	97 2.140.150 B
1. Mixer	97 2.155.83
2. Mixer	97 2.155.90
Filter	97 2.155.76
Demodulator	97 2.155.70
ISB-Demodulator (optional)	97 2.155.105
or	
IF-Out (optional)	97 2.155.100
VCO A	97 2.155.55
VCO B	97 2.155.63
BFO II	97 2.155.50 B
Power Supply	97 2.155.21
Interconnection PCB	97 2.155.19
Motherboard	97 2.155.23

Part 3

Buffer D/A Converter	97 2.155.30
Audio II PCB	97 2.155.37
Containing	
IC E A 1.5	97 E2.155.301
CPU II PCB	97 2.155.35
Containing	
IC N A 7.4	97 E2.155.261
IC O A 7.4	97 E2.155.262
IC R A 7.4	97 E2.155.263
Time Clock PCB	97 2.155.33
Input/output II PCB	97 2.155.38
Tuning PCB	97 2.155.28
Display PCB	97 2.155.25

Same Hardware options as for RX 1001 M are available for RX 5001, and additionally an ISB-Demodulator may be fitted and due to a new motherboard and a new 3 position Audio selector switch on the front panel, the two Audios (USB/LSB) can be processed properly. Because an Audio II PCB is always fitted and a wire link from P 21 of the new motherboard to the centerlug of the RF-potentiometer is fitted, the Manual RF-control becomes loudspeaker Audio squelch Control during AGC-Modes if so selected on the Audio II PCB.

NOTE

Some of the RX 5001 basic modules may be replaced by the corresponding modules out of the RX 1001 M/L11 but not vice versa. Refer to chapter 3.5.1.